

# **VERITAS NetBackup™ 4.5 Database Archiver**

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## **System Administrator's Guide**

**UNIX**

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**VERITAS**

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# Preface

---

This guide describes how to install, configure and use VERITAS NetBackup Database Archiver on a UNIX platform. In this guide, VERITAS NetBackup Database Archiver is referred to as NetBackup Database Archiver.

For specific information about the NetBackup server software, refer to:

- ◆ *NetBackup System Administrator's Guide for UNIX*, if you have a UNIX server.  
or
- ◆ *NetBackup System Administrator's Guide for Windows*, if you have a Windows NT/2000 server.

This document is the same as  
NetBackup\_AdminGuide\_DatabaseArchiver\_Unix.pdf distributed with the  
NetBackup Database Archiver software.



## Audience

This guide is intended for the:

- ◆ Oracle database administrator or application developer responsible for archiving Oracle databases.
- ◆ NetBackup system administrator responsible for configuring NetBackup.

A system or database administrator is defined as a person with system or database administrator privileges and responsibilities.

This guide assumes:

- ◆ A basic understanding of system administration.
- ◆ A working understanding of the NetBackup client and server software.
- ◆ A familiarity with the information covered in the following NetBackup manuals:
  - *NetBackup User's Guide for UNIX*
  - *NetBackup System Administrator's Guide for UNIX*
  - *NetBackup Troubleshooting Guide for UNIX*

## Accessibility

NetBackup contains features that make the user interface easier to use by people who are visually impaired and by people who have limited dexterity. Accessibility features include:

- ◆ Support for assistive technologies such as screen readers and voice input (Windows servers only)
- ◆ Support for keyboard (mouseless) navigation using accelerator keys and mnemonic keys

For more information, see the NetBackup system administrator's guide.

## Organization

This guide is organized as follows:

- ◆ The first chapter in this manual describes the technical features and concepts of NetBackup Database Archiver.



- ◆ The Installation chapter explains how to install NetBackup Database Archiver on your system.
- ◆ Configuration describes how to configure NetBackup for use with NetBackup Database Archiver. This information supplements the NetBackup administration manuals.
- ◆ The Using NetBackup Database Archiver chapter explains how to use NetBackup to perform archives and restores of Oracle databases. This information supplements the NetBackup manuals.
- ◆ Troubleshooting explains how to use NetBackup logs to troubleshoot NetBackup Database Archiver operations. This information supplements the NetBackup manuals.

## Related Documents

The following documents provide related information. For a more detailed listing of NetBackup documents, refer to *NetBackup Release Notes*.

If you have a UNIX server, refer to these documents:

- ◆ *NetBackup System Administrator's Guide for UNIX*  
Explains how to configure and manage NetBackup on a UNIX system.
- ◆ *NetBackup Media Manager System Administrator's Guide for UNIX*  
Explains how to configure and manage the storage devices and media on UNIX NetBackup servers. Media Manager is part of NetBackup.
- ◆ *NetBackup Troubleshooting Guide for UNIX*  
Provides troubleshooting information for UNIX-based NetBackup products. You can also refer to [www.support.veritas.com](http://www.support.veritas.com), access the Knowledge Base Search option, and search for TechNotes.

If you have a Windows server, refer to these documents:

- ◆ *NetBackup System Administrator's Guide for Windows*  
Explains how to configure and manage NetBackup on a Windows server system.
- ◆ *NetBackup Media Manager System Administrator's Guide for Windows*  
Explains how to configure and manage the storage devices and media on Windows NetBackup servers. Media Manager is part of NetBackup.
- ◆ *NetBackup Troubleshooting Guide for Windows*



Provides troubleshooting information for Windows-based NetBackup products. You can also refer to `www.support.veritas.com`, access the Knowledge Base Search option, and search for TechNotes.

# Conventions

The following explains typographical and other conventions used in this guide.

## Type Style

### Typographic Conventions

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Typeface	Usage
<b>Bold fixed width</b>	Input. For example, type <b>cd</b> to change directories.
Fixed width	Paths, commands, filenames, or output. For example: The default installation directory is <code>/opt/VRTSxx</code> .
<i>Italics</i>	Book titles, new terms, or used for emphasis. For example: <i>Do not</i> ignore cautions.
<i>Sans serif</i> (italics)	Placeholder text or variables. For example: Replace <i>filename</i> with the name of your file.
<b>Serif</b> (no italics)	Graphical user interface (GUI) objects, such as fields, menu choices, etc. For example: Enter your password in the <b>Password</b> field.

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## Notes and Cautions

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**Note** This is a Note. Notes are used to call attention to information that makes using the product easier or helps in avoiding problems.

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**Caution** This is a Caution. Cautions are used to warn about situations that could cause data loss.

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## Key Combinations

Some keyboard command sequences use two or more keys at the same time. For example, holding down the **Ctrl** key while pressing another key. Keyboard command sequences are indicated by connecting the keys with a plus sign. For example:

Press Ctrl+t

## Command Usage

The following conventions are frequently used in the synopsis of command usage.

brackets [ ]

The enclosed command line component is optional.

Vertical bar or pipe (|)

Separates optional arguments from which the user can choose. For example, when a command has the following format:

`command arg1|arg2`

the user can use either the *arg1* or *arg2* variable.

## Terms

The terms listed in the table below are used in the VERITAS NetBackup documentation to increase readability while maintaining technical accuracy.

Term	Definition
Microsoft Windows, Windows	<p>Terms used as nouns to describe a line of operating systems developed by Microsoft, Inc.</p> <p>A term used as an adjective to describe a specific product or noun. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI.</p> <p>Where a specific Windows product is identified, then only that particular product is valid with regards to the instance in which it is being used.</p> <p>For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at <a href="http://www.support.veritas.com">http://www.support.veritas.com</a>.</p>



Term	Definition (continued)
Windows servers	A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and Windows 2000.
Windows clients	A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE.

## Getting Help

For updated information about this product, including system requirements, supported platforms, supported peripherals, and a list of current patches available from Technical Support, visit our web site:

`http://www.support.veritas.com/`

VERITAS Customer Support has an extensive technical support structure that enables you to contact technical support teams that are trained to answer questions to specific products. You can contact Customer Support by sending an e-mail to [support@veritas.com](mailto:support@veritas.com), or by finding a product-specific phone number from the VERITAS support web site. The following steps describe how to locate the proper phone number.

1. Open `http://www.support.veritas.com/` in your web browser.
2. Click **Contact Support**. The *Contacting Support Product List* page appears.
3. Select a product line and then a product from the lists that appear. The page will refresh with a list of technical support phone numbers that are specific to the product you just selected.



NetBackup Database Archiver extends the backup and recovery management capabilities of NetBackup and its Media Manager to include the export and import of Oracle data in XML format for long term archiving and retrieval.

This chapter introduces NetBackup Database Archiver. Read this chapter for a description of

- ◆ Features of NetBackup Database Archiver
- ◆ Terminology for NetBackup Database Archiver
- ◆ Technical Overview of NetBackup Database Archiver



## Features of NetBackup Database Archiver

This section describes the NetBackup Database Archiver main features. For explanations of unfamiliar terminology, see “Terminology for NetBackup Database Archiver”.

Feature	Description
System and database-independent archive format	NetBackup Database Archiver uses the eXtensible Markup Language (XML) standard to represent relational database table data extracted from an Oracle database.
Self-identifying archive format	The XML Schema standard is used to describe the table data that is included in an archive. In this way, the archive contains the key to understanding the format of the data as well as the data itself.
Command line interfaces that allow export and import at row-level granularity	Parameter files control what table data will be included in an export, and what table data will be extracted from an archive for import into an Oracle database.
Restore destination option	NetBackup Database Archiver can either restore XML data to an Operating System directory, or import the data back into the Oracle database.
Flexible archive image searches	The NetBackup catalog contains information on the contents of the archive that can be searched using flexible search criteria, such as tablename or user.
Media and device management	All devices supported by Media Manager are available to NetBackup Database Archiver.
Scheduling facilities	<p>NetBackup scheduling facilities on the master server can be used to shedule automatic and unattended Oracle XML archives.</p> <p>This also lets you choose the times when these operations can occur. For example, to prevent interference with normal daytime operations, you can schedule your database archives to occur only at night.</p>
Multiplexed archives and restores	NetBackup Database Archiver lets you take advantage of NetBackup's multiplexing capabilities. Multiplexing directs multiple data streams to one backup device, thereby reducing the time necessary to complete the operation.

Feature	Description
Sharing the same devices and tapes used during other file backups	It is possible to share the same devices and media used for other backups or to give NetBackup Database Archiver exclusive use of certain devices and media.
Centralized and networked backup operations	From the NetBackup master server, you can schedule database archives or start them manually for any client. The Oracle databases can also reside on hosts that are different from the devices on which NetBackup stores the archives.
Graphical user interfaces	<p>NetBackup provides the following graphical user interfaces for client users and administrators:</p> <ul style="list-style-type: none"><li>◆ Backup, Archive, and Restore interface, jbpSA</li><li>◆ Client user motif interface, xbp</li><li>◆ NetBackup Administration Console on Java, jnbSA</li><li>◆ NetBackup Administration Console on Windows</li></ul> <p>A database administrator or NetBackup administrator can start archive or restore operations for Oracle from the NetBackup Administration Console on the master server.</p>



## Terminology for NetBackup Database Archiver

This section explains important terms that may be new to an Oracle database administrator or a NetBackup administrator.

### NetBackup Terms

This section describes NetBackup terms.

<i>NetBackup</i>	NetBackup backs up and restores files, directories, raw partitions, and databases on client systems that have Oracle databases. NetBackup also archives and restores logical database data.
<i>NetBackup schedule</i>	NetBackup schedules control NetBackup operations such as: when backups and archives can occur, the type of backup (full, incremental) to perform, and how long NetBackup retains the image (retention level).
<i>Administrator directed backups and archives</i>	NetBackup administrators are able to perform remote backups of all files, directories, databases, and raw partitions contained on client systems within a client/server network. Also, NetBackup administrators are able to perform remote archives of databases on client systems.
<i>User-directed backups, archives, and restores</i>	NetBackup users are able to perform backups of all files, directories, databases, and raw partitions contained on client systems within a client network, as well as archiving databases on client systems.
<i>Graphical interfaces</i>	Graphical user interfaces are available for both users and administrators.
<i>Media Manager</i>	The Media Manager provides complete management and tracking of all devices and media used during backups and restores.

### NetBackup Database Archiver Terms

This section describes NetBackup Database Archiver terms. The graphics illustrate the relationships of the terms as they apply to both archives and restores.





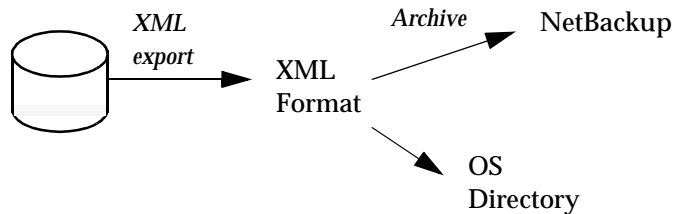
*eXtensible Markup  
Language (XML)*

XML 1.0 is a universal format for structured documents and data. The XML 1.0 standards are produced by the World Wide Web Consortium, and include the XML Schema standard.

*Unicode UTF-8*

The character set encoding generated by NetBackup Database Archiver. UTF-8 is supported by standard XML processors and US7ASCII is a strict subset of UTF-8.

## Archives



*Oracle XML Archive*

NetBackup Database Archiver manages the extraction of database table data, the conversion into XML format, and the storage of XML data on disk or tape.

*XML export*

NetBackup Database Archiver converts Oracle table data to XML format (XML schema, or metadata, and XML instance, or data).

*Archive*

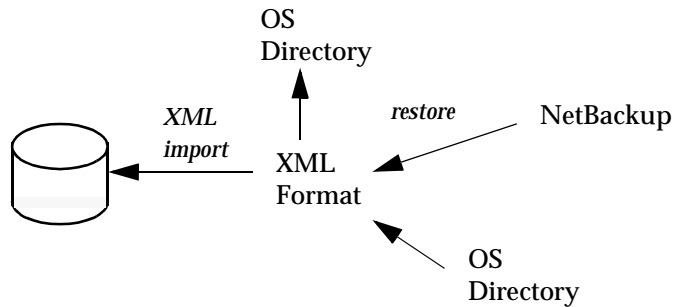
NetBackup stores the XML data on a NetBackup storage unit.

*bporaexp*

NetBackup Database Archiver's export utility converts Oracle database table data into a self-identifying XML schema document and instance document, and allows them to be archived by NetBackup or re-directed to an OS directory.



## Restores



### *Oracle XML Restore*

NetBackup Database Archiver manages the retrieval of archived database table data, the parsing of the XML format, and the insertion of the data back into the Oracle database.

### *Restore*

NetBackup retrieves the XML-formatted data from the storage unit.

### *XML import*

NetBackup Database Archiver parses XML-formatted Oracle table data and inserts data into the Oracle database.

### *bporaimp*

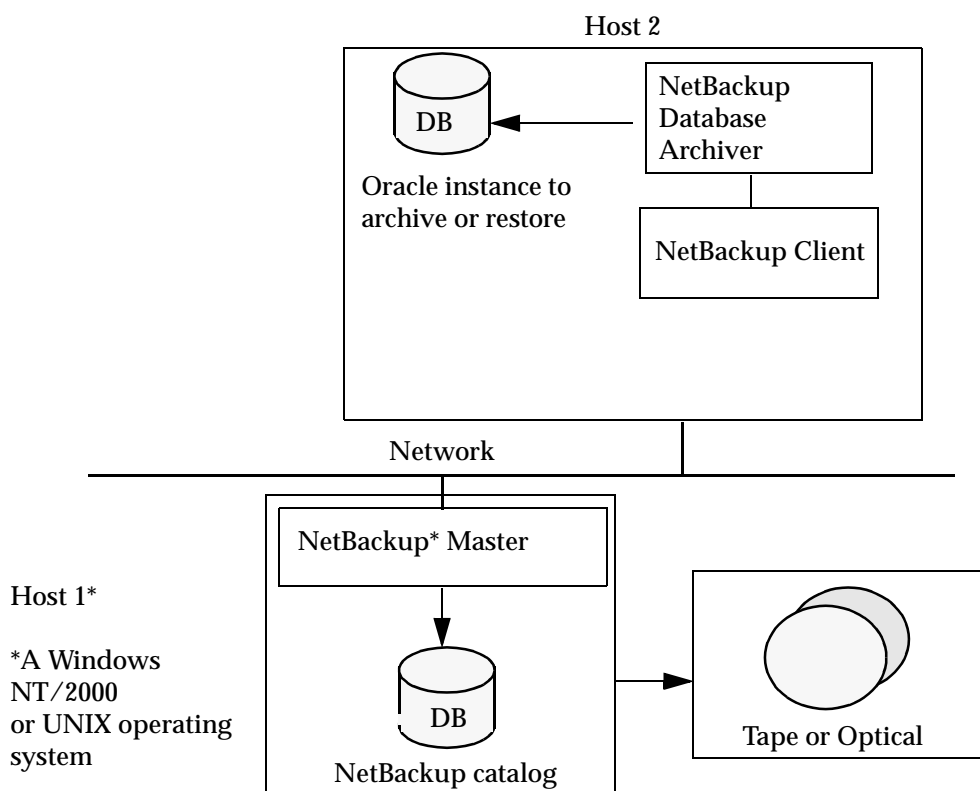
NetBackup Database Archiver's import utility can parse the XML-formatted data for re-insertion into the database, or can re-direct the data to an OS directory.

## Technical Overview of NetBackup Database Archiver

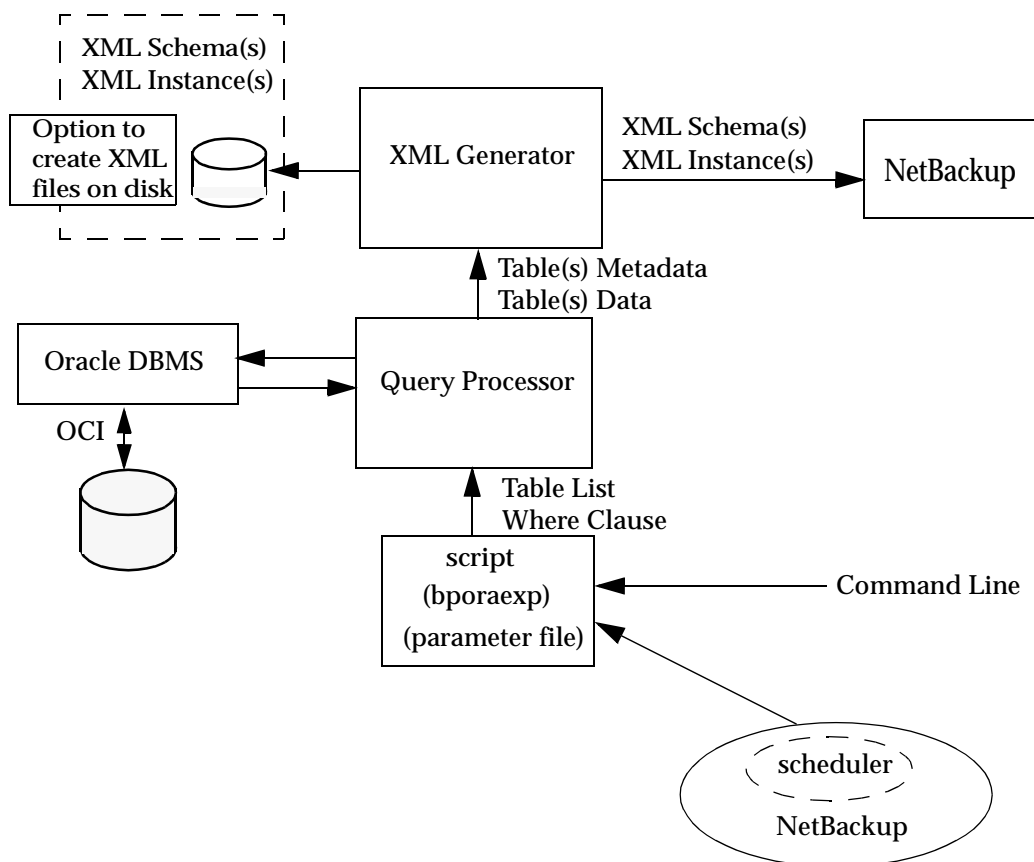
The example network below shows the major components in a NetBackup Database Archiver configuration.

The host with the database must be a NetBackup UNIX client and have NetBackup Database Archiver installed.

The storage devices are connected to the NetBackup media server. A NetBackup master server can access the storage devices through the media server. Both the master server and the media server must have NetBackup server software installed.



## Sequence of Operation - Archive



NetBackup Database Archiver users or schedules start database archives by selecting a NetBackup Database Archiver script in the Backup scheduler or invoking the script at the command line on the client.

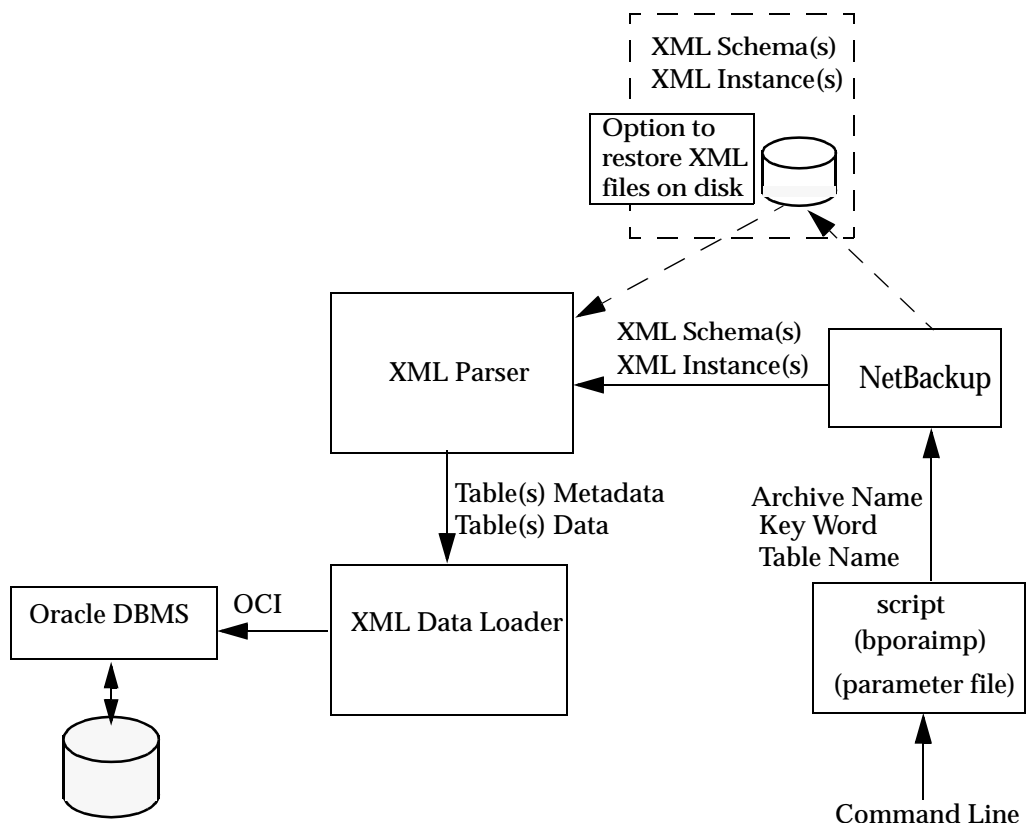
For an archive:

1. The NetBackup Database Archiver script calls the `bpوراexp` utility with a specified parameter file.
2. The Query Processor uses the parameters in the specified file to build an SQL query for each table.
3. Oracle's OCI API executes the queries on the Oracle instance to be archived.

4. The Query Processor passes the output (including metadata and data for a single table or multiple tables) to the XML Generator.
5. For each table passed, the XML Generator builds one or more sets of XML Schema and XML Instance documents.
6. XML data streams are archived by NetBackup.
7. Alternately, `bporaexp` allows the files to be saved to an operating system directory.



## Sequence of Operation - Restore



NetBackup Database Archiver users start database restores by invoking a NetBackup Database Archiver script at the client command line.

For a restore:

1. The NetBackup Database Archiver script calls the `bporaimp` utility with a specified parameter file.
2. The input parameters that identify the XML Archive to restore are passed to NetBackup.
3. NetBackup locates and reads the set of XML schema and instance documents from the NetBackup storage unit.

4. The XML data stream is passed to an XML parser, which passes the data to the XML Data Loader.
5. The XML Data Loader uses Oracle's OCI API to insert the data into the database.

Optionally, `bporaimp` allows the XML data stream to bypass the XML parser and be sent to an operating system directory. In addition, users can restore the table metadata only into an operating system directory. `bporaimp` also allows import from an operating system directory into Oracle.







This chapter describes the NetBackup Database Archiver installation procedure. It includes a section on installation prerequisites.

To determine which Oracle version levels are supported, refer to the Database Agent Platform Support section in the *NetBackup Release Notes*.



## Installation Prerequisites

Before installing NetBackup Database Archiver, be sure you have completed the following procedures:

- ❖ Install the NetBackup server software on the server.

The NetBackup server platform can be any of those that NetBackup supports.

For a DataCenter installation, refer to the *NetBackup DataCenter Installation Guide for UNIX* or the *NetBackup DataCenter Installation Guide for Windows*.

- ❖ Install the NetBackup client software on the client where you will be archiving the databases.

For a DataCenter installation, refer to the *NetBackup DataCenter Installation Guide for UNIX* for installation instructions on UNIX clients.

Now you are ready to install NetBackup Database Archiver on the client where you will be archiving the databases. Refer to the next section for detailed instructions on installing NetBackup Database Archiver.

# Installing NetBackup Database Archiver

There are two ways to install database agent software.

- ◆ Remote Installation - Loads the software on a master server. The user will then push the database software out to affected clients.

Refer to the following section.

- ◆ Local Installation - Loads and installs the software only to the local machine.

Refer to “Local Installation of NetBackup Database Archiver” on page 20.

## Remote Installation of NetBackup Database Archiver

During a remote installation, NetBackup Database Archiver files are loaded onto the current machine, which must be a UNIX master server. The software will then be distributed to the clients and installed.

### Installation Requirements

- ◆ The version of the NetBackup Client and the version of NetBackup Database Archiver must be the same (e.g., 4.5).
- ◆ There must be adequate disk space on each client that will receive the software.  
Less than one megabyte of additional disk space is required in the client's *install\_path* directory.
- ◆ NetBackup version 4.5 software is installed and operational on each Database Archiver client.

### Remote Install Procedure

1. Log in as the root user on the server.

If you are already logged in, but are not the root user, execute the following command.

```
su - root
```

2. Make sure a valid license key for NetBackup Database Archiver has been registered. To view or add license keys, perform one of the following:
  - Run the command  
*install\_path/netbackup/bin/admincmd/get\_license\_key*.
  - Open the NetBackup Administration Console and from the **Help** menu choose **License Keys**.



3. Insert the CD-ROM into the drive.

4. Change the working directory to the CD-ROM directory.

```
cd /CD_mount_point
```

5. Load the software on the server by executing the `install` script.

```
./install
```

- a. Select the NetBackup Database Agent Software option.

The following prompt will appear:

```
Do you want to do a local installation? (y/n) [n]
```

- b. Answer `n`.

You are presented with a menu of all database agents available on the CD-ROM.

- c. Select the Netbackup Database Archiver option.

- d. Enter `q` to quit selecting options.

A prompt will appear asking if the list is correct.

- e. Answer `y`.

The `install` script identifies the types of client software loaded during the installation of the NetBackup server. By default, any matching NetBackup Database Archiver software will automatically be loaded. If there are more platforms available, the script displays a menu giving you the opportunity to add more client types to the default list. Once the list is complete, database agent version files, compressed tar files and the `install_dbext` script are copied to directory `install_path/netbackup/dbext`.

6. Distribute and install the NetBackup Database Archiver software on each client as described in the next sections.

There are two types of installs.

- *initial install* — Use an initial install if the clients you intend to update have not been configured into policies of type Oracle.
- *upgrade install* — Use an upgrade install if all the clients you intend to update already have been configured into policies of type Oracle.

---

**Note** The NetBackup version level (for example, 4.5) running on the clients you wish to update must be the same as the version level of the NetBackup Database Archiver being installed.

---

## Initial Install Procedure

1. Execute the following command to create a file containing a list of clients currently configured in the NetBackup database.

```
cd install_path/netbackup/bin
./admincmd/bpplclients -allunique -noheader > filename
```

where *filename* is the name of the file to contain the list of unique clients. If no clients have been configured in the NetBackup database, and therefore *filename* is empty, create *filename* using the same format as that generated by *bpplclients*.

*bpplclients* generates output in following format:

```
hardware operating_system client_name
```

where:

*hardware* is the hardware name. For example, execute the *ls* command in directory *install\_path/netbackup/client*.

*operating\_system* is the operating system name. For example, execute the *ls* command in directory *install\_path/netbackup/client/hardware*.

*client\_name* is the name of the client.

For example, the contents of *filename* might look like this:

```
Solaris Solaris2.6 curry
RS6000 AIX4.3.3 cypress
```

2. Edit *filename*.

This is an optional step. Use it if the contents of *filename* need to be changed. Edit *filename* to contain only those clients you wish to update with NetBackup Database Archiver software.

3. Specify *filename* on the *update\_dbclients* command.

For example:

```
cd install_path/netbackup/bin
./update_dbclients Database_Archiver -ClientList filename
```



**Note** If the receiving client is configured as an HP-UX11.00, Solaris2.6, Solaris7, Solaris8, Solaris9, AIX4.3.3, or AIX5 machine, both the 32 bit and 64 bit versions of NetBackup Database Archiver will be installed.

---

Only clients listed in *filename* will be updated.

## Upgrade Install Procedure

1. Execute the following command.

```
cd install_path/netbackup/bin
./update_dbclients Database_Archiver ALL ALL
```

This command will look at all possible clients and only update the ones currently in the Oracle policy type.

Instead of ALL ALL, you may use `-ClientList filename` as explained in “Initial Install Procedure” on page 17.

---

**Note** If the receiving client is configured as an HP-UX11.00, Solaris2.6, Solaris7, Solaris8, Solaris9, AIX4.3.3, or AIX5 machine, both the 32 bit and 64 bit versions of NetBackup Database Archiver will be installed.

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**Note** With an initial or upgrade install, some clients may be skipped and not updated. Possible reasons are:

- the client is a PC client (which cannot be updated from a UNIX server)
- NetBackup Database Archiver does not support that client's platform type
- the NetBackup Database Archiver software for that client type was not loaded onto the server in step 5 of the “Remote Install Procedure” on page 15
- (if using the ALL ALL method) the client does not belong to the Oracle policy type

All skipped clients are available in a file whose name is displayed by `update_dbclients`.

---

The number of updates required to distribute the software to the clients is displayed.

If more than one update will occur, you will see the following prompt:

```
Enter the number of simultaneous updates you wish to take place. 1 - max dflt
```

(must be in the range of 1 to *max*; default: *dflt*).

where:

*max* is the maximum number of simultaneous updates that is allowed. The value displayed will be a number ranging from 1 to 30.

*dflt* is the default number the program will use if you press **Enter**. The value displayed will be a number ranging from 1 to 15.



For example, if three client updates will be performed, the *max* and *dflt* values shown would be 3. If 50 client updates will be performed, the *max* value shown would be 30 and the *dflt* value shown would be 15.

`update_dbclients` will start the number of updates that you specify. If this number is less than the total number of client updates to be performed, new updates will start as the previous updates finish until all of the updates have been completed.

Based on your answer, the time it will take to update the clients is displayed, followed by this question:

```
Do you want to upgrade the clients now? (y/n) [y]
```

## 2. Enter **y** or **n** for the prompt.

If you answer **n**, `update_dbclients` will quit and leave the list of clients it would have updated in a file. This file can later be used by the `-ClientList` parameter mentioned previously.

Answer **y** to continue the installation process.

If the `update_dbclients` command was successful in distributing the software to the client, it will automatically run the `install_dbext` script on the client. If `install_dbext` has successfully completed, there will be a version file in directory `install_path/netbackup/ext` that contains the version of NetBackup Database Archiver that was installed and an installation timestamp. The `update_dbclients` command displays a note on whether the update was successful for each client. When the `update_dbclients` command has completed, it displays a file name that contains a complete log of what happened for each client. If the update failed for any client, the log file should be examined to determine the problem.



## Local Installation of NetBackup Database Archiver

During a local installation, the NetBackup Database Archiver files are extracted and installed.

The local machine can be a client or a master server that also happens to be a client.

### Installation Requirements

- ◆ The version of the NetBackup Client and the version of NetBackup Database Archiver are the same (e.g., 4.5).
- ◆ The local machine must have adequate disk space.  
Less than one megabyte of additional disk space is required in the *install\_path* directory. However, more disk space may be necessary at run time.
- ◆ NetBackup version 4.5 software is installed and operational.

### Local Install Procedure

1. Log in as the root user on the machine.  
If you are already logged in, but are not the root user, execute the following command.  

```
su - root
```

  - If the local machine is a client, go to step 3.
  - If the local machine is a server, go to step 2.
2. Make sure a valid license key for NetBackup Database Archiver has been registered. To view or add license keys, perform one of the following:
  - Run the command  

```
install_path/netbackup/bin/admincmd/get_license_key.
```
  - Open the NetBackup Administration Console and from the **Help** menu choose **License Keys**.
3. Insert the CD-ROM into the drive.
4. Change the working directory to the CD-ROM directory.  

```
cd /CD_mount_point
```
5. Load and install the software by executing the `install` script.



---

**Note** It is expected that the NetBackup version level (for example, 4.5) running on the local machine matches the version level of the database agent being installed.

---

`./install`

- a. Select the NetBackup Database Agent Software option.

The following prompt will appear:

Do you want to do a local installation? (y/n) [n]

- b. Answer **y**.

You are presented with a menu of all database agents available on the CD-ROM.

- c. Select the Netbackup Database Archiver option.

- d. Enter **q** to quit selecting options.

A prompt will appear asking if the list is correct.

- e. Answer **y**.

The following actions will occur:

- The version file, compressed tar file and `install_dbext` script will be loaded to directory `install_path/netbackup/ext/dbext`.
- The `install` script will automatically execute the `install_dbext` script.
- If the receiving client is configured as an HP-UX11.00, Solaris2.6, Solaris7, or Solaris8, AIX4.3.3, or AIX5 machine, both the 32 bit and 64 bit versions of NetBackup Database Archiver will be installed.
- If `install_dbext` has successfully completed, there will be a version file in directory `install_path/netbackup/ext/` that contains the version of NetBackup Database Archiver that was installed and an installation timestamp.





Before attempting to configure NetBackup Database Archiver, complete the installation procedure as described in the Installation chapter.

The following is the configuration procedure.

1. Configuring the Media Manager
2. Setting the Maximum Jobs per Client Global Attribute
3. Configuring a NetBackup Policy
4. Configuring the Run-Time Environment
5. Creating Scripts
6. Testing NetBackup Database Archiver Configuration Settings

The following sections in this chapter describe each of these steps in detail.

To configure NetBackup Database Archiver from a Windows NetBackup server, see “Configuration Using the NetBackup Administration Console for Windows” on page 24.

To configure NetBackup Database Archiver from a UNIX NetBackup server, see “Configuration Using the NetBackup Administration Console for UNIX” on page 36.



## Configuration Using the NetBackup Administration Console for Windows

Although the database agent is installed on the NetBackup client, some configuration procedures are performed using the NetBackup Administration Console on the server.

These procedures include:

- ◆ Configuring the Media Manager
- ◆ Setting the Maximum Jobs per Client global attribute
- ◆ Configuring a NetBackup policy
- ◆ Testing NetBackup Database Archiver configuration settings

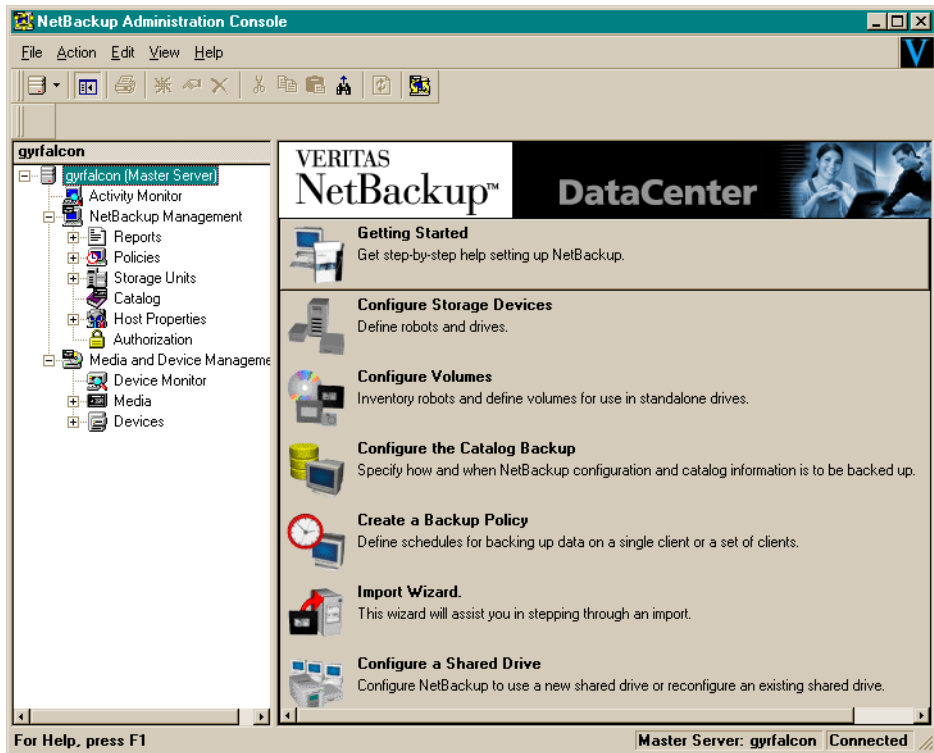
See the next section for instructions on starting the NetBackup Administration Console.

### ▼ To launch the NetBackup Administration Console for Windows

1. Log on to the server as administrator.
2. From the Windows **Start** menu, point to **Programs**, point to **VERITAS NetBackup** and click **NetBackup Administration Console**.

The NetBackup Administration Console appears.





## Configuring the Media Manager

Use the Media Manager to configure tapes or other storage units for a NetBackup Database Archiver configuration.

- ◆ Refer to the *Media Manager for NetBackup System Administrator's Guide for UNIX* if the NetBackup server is UNIX.
- ◆ Refer to the *Media Manager for NetBackup System Administrator's Guide for Windows* if the NetBackup server is Windows.

The number of volumes required will depend on the devices used, the amount of Oracle data that you are archiving, and the frequency of backups or archives.

## Setting the Maximum Jobs per Client Global Attribute

The **Maximum jobs per client** attribute value is figured with the following formula.



$$\text{Max Jobs per Client} = \text{Number of Streams} \times \text{Number of Policies}$$

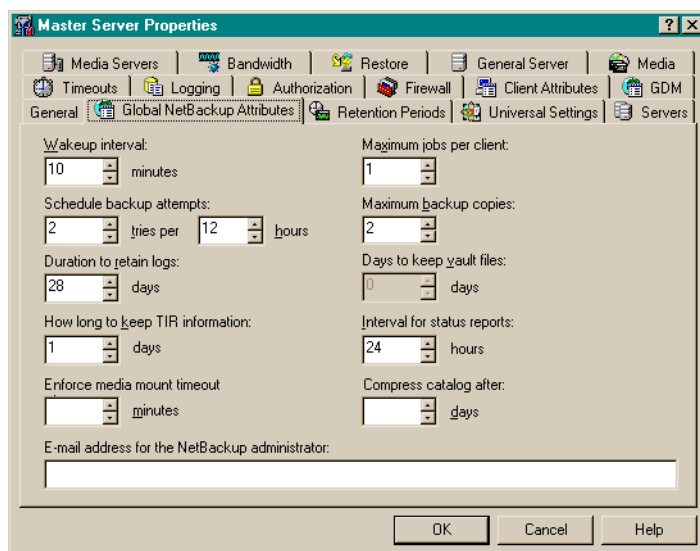
Where:

- ◆ *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.
- ◆ *Number of Policies* is the number of policies that may back up this client at the same time. This number can be greater than one. For example, a client may be in two policies in order to back up two different databases. These backup windows may overlap.

To avoid any problems, we recommend that you enter a value of 99 for the **Maximum jobs per client** global attribute.

### ▼ To set the Maximum jobs per client attribute on a Windows server

1. In the left pane of the NetBackup Administration Console, expand **Host Properties**. Select **Master Server**.
2. In the right pane, double-click on the server icon.  
The Master Server Properties dialog box appears.
3. In the Master Server Properties dialog box, click the **Global NetBackup Attributes** tab.



The default value is 1 for **Maximum jobs per client**.

4. Change the **Maximum jobs per client** value to a value equal to the maximum number of backups allowed per client.

---

**Tip** To avoid any problems, we recommend that you enter a value of 99 for the **Maximum jobs per client** global attribute.

---

## Configuring a NetBackup Policy

A NetBackup policy defines the backup criteria for a specific group of one or more clients. These criteria include:

- ◆ storage unit and media to use
- ◆ policy attributes
- ◆ backup schedules
- ◆ script files to be executed on the clients
- ◆ clients to be backed up

To use NetBackup Database Archiver, at least one Oracle policy with the appropriate schedules needs to be defined. A configuration can have a single policy that includes all clients or there can be many policies, some of which include only one client.

Most requirements for Oracle policies are the same as for file system backups. In addition to the attributes described here, there are other attributes for a policy to consider. Refer to the *NetBackup System Administrator's Guide* for detailed configuration instructions and information on all the attributes available.

### Adding New Policies

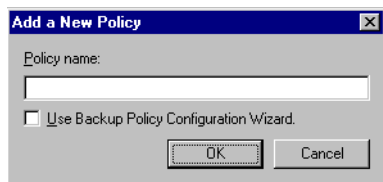
Use this procedure when configuring a policy from a Windows server or from a NetBackup Remote Administration Console host.

#### ▼ To add a new policy

1. Log on to the server as administrator.
2. Start the NetBackup Administration Console.
3. If your site has more than one master server, choose the one where you want to add the policy.
4. In the left pane, right-click **Policies**. From the menu, select **New Policy**.



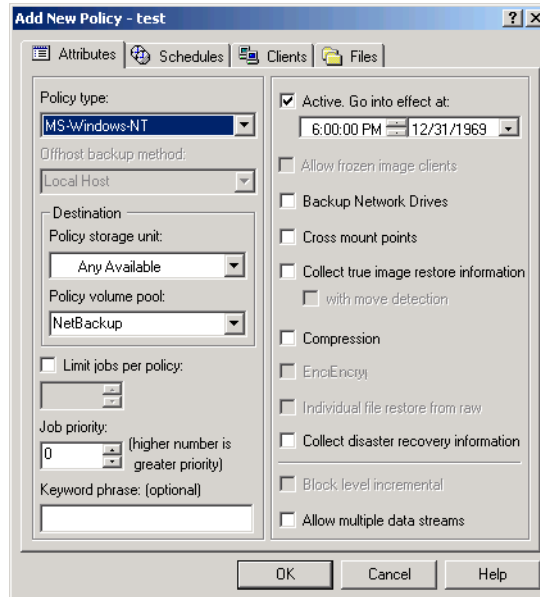
The Add a New Policy dialog box appears.



- a. In the **Policy name** box, type a unique name for the new policy.
  - b. Choose whether to use the wizard for configuring the policy. The wizard guides you through the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy.
    - To use the wizard, select the **Use Backup Policy Configuration Wizard** box and click **OK**. The wizard starts and you create the policy by following the prompts. When prompted, select the Oracle policy type.
    - If you require more control over the settings than the wizard provides, then do not select the **Use Backup Policy Configuration Wizard** box and proceed to step 5.
5. Click **OK**.



A dialog box appears in which you can specify the general attributes for the policy.



6. From the **Policy Type** box, select the Oracle policy type.
7. Complete the entries on the **Attributes** tab as explained in “Description of Attributes.”
8. Add other policy information:
  - To add schedules, see “Adding New Schedules.”
  - To add scripts, see “Specifying the List of Scripts.”
  - To add clients, see “Adding Clients to a Policy.”
9. Click **OK**. The new policy will be created.

## Description of Attributes

With a few exceptions, NetBackup manages a database backup like a file system backup. Policy attributes that are different for Oracle backups are explained below.



Your other policy attributes will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide* for detailed explanations of the policy attributes.

Attribute	Description
Policy type	Determines the type of clients that can be in the policy and in some cases the types of backups that can be performed on those clients. To use NetBackup Database Archiver, you must have defined at least one Oracle policy.

## Adding New Schedules

Each policy has its own set of schedules. These schedules control initiation of automatic backups or archives and also specify when user operations can be initiated.

A Oracle backup or archive requires at least two specific schedule types: an Application Backup schedule and an Automatic Backup schedule. You can also create additional schedules.

The following procedures explain how to configure the required schedule types, and how to add other new schedules.

### ▼ To configure an Application Backup schedule

#### 1. Double-click on the schedule named **Default-Application-Backup**.

All Oracle database operations are performed through NetBackup Database Archiver using an Application Backup schedule. This includes those backups started automatically.

You must configure an Application Backup schedule for each Oracle policy you create. If you do not do this, you will not be able to perform a backup. To help satisfy this requirement, an Application Backup schedule named **Default-Application-Backup** is automatically created when you configure a new Oracle policy.

#### 2. Specify the other properties for the schedule as explained in “Schedule Properties.”

The backup window for an Application Backup schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the Application Backup schedule starts processes that are required for all NetBackup Database Archiver backups, including those started automatically.

For example, assume that you:

- expect users to perform NetBackup operations during business hours, 0800 to 1300.
- configured automatic backups to start between 1800 and 2200.

The Application Backup schedule must have a start time of 0800 and a duration of 14 hours.

Example Settings for an Application Backup schedule.

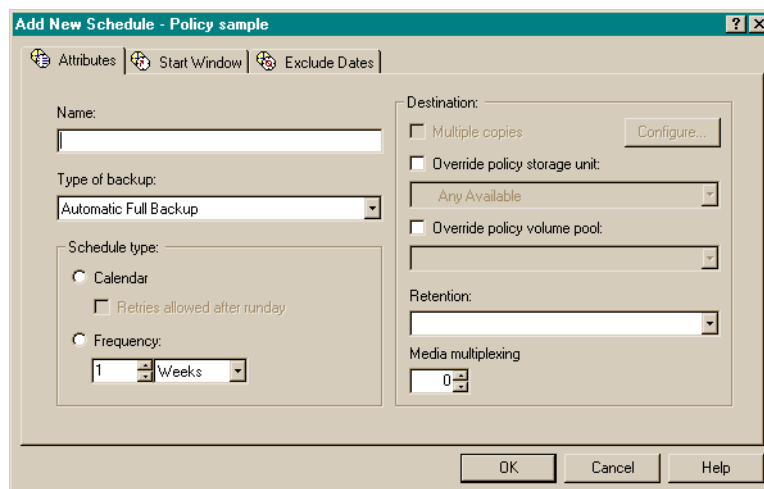
Type of Backup	Schedule settings	Description	Settings
Application Backup	Retention	The length of time backup images are stored.	Infinity
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday through Saturday 00:00:01 - 23:59:59

**Tip** Set the time period for the Application Backup schedule for 24 hours per day, seven days per week. This will ensure that your NetBackup Database Archiver operations are never locked out due to the Application Backup schedule.

### ▼ To configure an automatic backup schedule

1. In the left pane, right-click on the name of the policy and select **New Schedule** from the menu.

The Add New Schedule dialog box appears. The title bar shows the name of the policy to which you are adding the schedules.



2. Specify a unique name for the schedule.



**3. Select the **Type of Backup**.**

For information on the types of backups available for this policy, see “Types of Backups.”

Refer to the following table for recommended settings for an Automatic Backup

Type of Backup	Schedule settings	Description	Settings
Automatic Full Backup	Retention	The length of time to store the record of an archive	infinity
	Frequency	Frequency determines how often an archive should be performed	every month
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday, 18:00:00 - 22:00:00

**4. Specify the other properties for the schedule as explained in “Schedule Properties.”**

**Types of Backups**

Application Backup	The Application Backup schedule enables user-controlled NetBackup operations performed on the client. At least one Application Backup schedule type must be configured for each Oracle policy. The Default-Application-Backup schedule is automatically configured as an Application Backup schedule.
Automatic Full Backup	The Automatic Full Backup schedule enables scheduled NetBackup operations performed on the client. It is used to automatically execute a Database Archiver script.
Automatic Differential Incremental Backup	The Automatic Differential Incremental Backup schedule should not be used for Database Archiver.
Automatic Cumulative Incremental Backup	The Automatic Cumulative Incremental Backup schedule should not be used for Database Archiver.

## Schedule Properties

Some of the schedule properties have a different meaning for database backups than for a regular file system backup. These properties are explained below.

Other schedule properties will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide* for detailed explanations of the schedule properties.

Property	Description
<b>Type of backup</b>	Specifies the type of backup that this schedule will control. The selection list shows only the backup types that apply to the policy you are configuring. For more information see "Types of Backups."
<b>Frequency</b>	This setting is used only for scheduled backups, and not for user-directed backups. <b>Frequency</b> specifies the period of time that will elapse until the next backup or archive operation can begin on this schedule. For example, if the frequency is seven days and a successful backup occurs on Wednesday, the next full backup will not occur until the following Wednesday. Normally, incremental backups will have a shorter frequency than full backups.
<b>Calendar</b>	This setting is used only for scheduled backups, and not for user-directed backups. The <b>Calendar</b> option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.
<b>Retention</b>	The retention period for an Application Backup or Automatic Full Backup refers to the length of time that NetBackup keeps archive images. NetBackup Database Archiver creates archives for long term storage and recovery. Set the retention level at a period of years, or infinity.
<b>Multiple copies</b>	If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Oracle policy, configure <b>Multiple copies</b> on the Application Backup schedule.

## Specifying the List of Scripts

The Scripts list in a database policy has a different meaning than the File list has for other policies. Normally, in a Standard policy, you would list files and directories to be backed up. But since you are now configuring a database policy, you will list scripts.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Scripts list will be executed for the Automatic Full Backup schedule as specified under the **Schedules** tab.

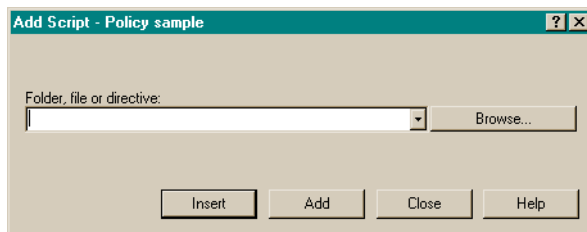


All scripts specified in the Scripts list are executed during manual or automatic backups. NetBackup will start backups by running the scripts in the order that they appear in the Scripts list.

### ▼ To add scripts to the Scripts List

1. In the left pane of the NetBackup Administration Console, right-click on the policy name and click **New Script**.

A dialog box appears. The title bar shows the name of the policy to which you are adding the script.



2. Type the name of the Database Archiver script.

Be sure to specify the full pathname when listing Database Archiver scripts. For example:

```
install_path/netbackup/ext/db_ext/oracle/samples/bporaexp/data_archiver_export.sh
```

Be sure that the Database Archiver scripts listed here are installed on each client in the Client list.

3. Click **Add**.

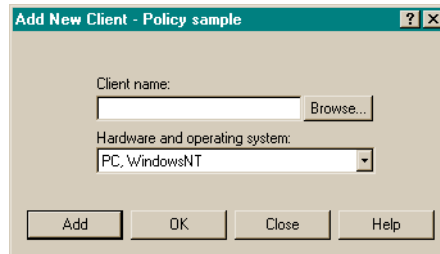
## Adding Clients to a Policy

The client list is the list of clients on which your NetBackup Database Archiver scripts will be executed during an automatic backup. A NetBackup client must be in at least one policy but can be in more than one.

▼ **To add clients to a policy**

1. In the left pane of the NetBackup Administration Console, right-click on the policy name and click **New Client**.

The Add New Client dialog box appears. The title bar shows the name of the policy to which you are adding the clients.



2. In the **Client name** text box, type the name of the client that you are adding.  
On the client the following should be installed:
  - Oracle
  - NetBackup client or server
  - NetBackup Database Archiver
  - the backup, archive, or restore script(s)
3. Choose the hardware and operating system type.
4. Click **Add**.
5. To add another client, repeat step 2 through step 4. If this is the last client, click **Close** to close the dialog box.



## Configuration Using the NetBackup Administration Console for UNIX

Although the database agent is installed on the NetBackup client, some configuration procedures are performed using the NetBackup Administration Console on the server.

These procedures include:

- ◆ Configuring the Media Manager
- ◆ Setting the Maximum Jobs per Client global attribute
- ◆ Configuring a NetBackup policy
- ◆ Testing NetBackup Database Archiver configuration settings

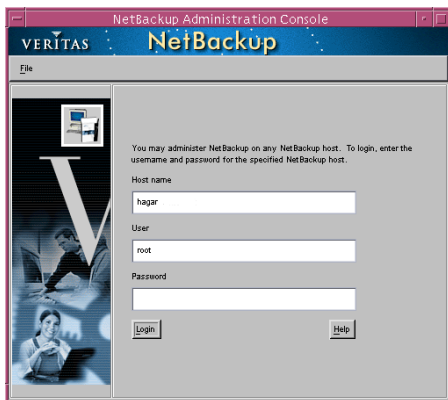
See the next section for instructions on starting the NetBackup Administration Console.

### ▼ To launch the NetBackup Administration Console for UNIX

1. Log onto the UNIX server as root.
2. Start the NetBackup Administration Console by executing:

*install\_path/netbackup/bin/jnbSA &*

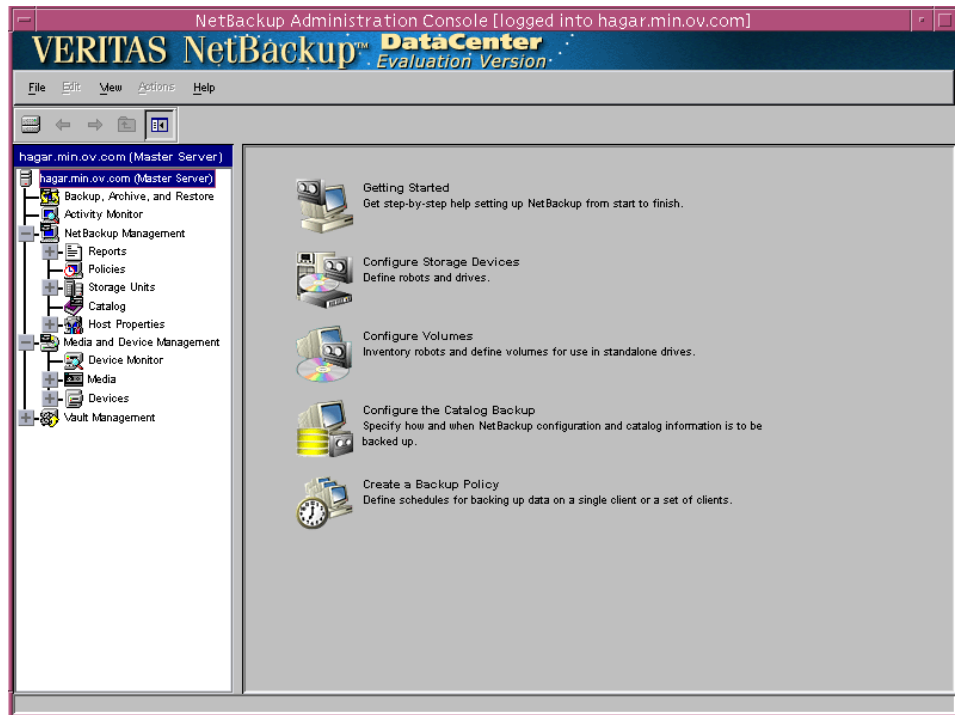
The Login dialog box appears.



3. Type the name of the master server where you initially want to manage NetBackup. You can specify any NetBackup master server. Indicate the User and Password.



4. Click **Login**. The NetBackup Administration Console appears.



## Configuring the Media Manager

Use the Media Manager to configure tapes or other storage units for a NetBackup Database Archiver configuration.

- ◆ Refer to the *Media Manager for NetBackup System Administrator's Guide for UNIX* if the NetBackup server is UNIX.
- ◆ Refer to the *Media Manager for NetBackup System Administrator's Guide for Windows* if the NetBackup server is Windows.

The number of volumes required will depend on the devices used, the amount of Oracle data that you are archiving, and the frequency of backups or archives.

## Setting the Maximum Jobs per Client Global Attribute

The **Maximum jobs per client** attribute value is figured with the following formula.



$\text{Max Jobs per Client} = \text{Number of Streams} \times \text{Number of Policies}$

Where:

- ◆ *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.
- ◆ *Number of Policies* is the number of policies that may back up this client at the same time. This number can be greater than one. For example, a client may be in two policies in order to back up two different databases. These backup windows may overlap.

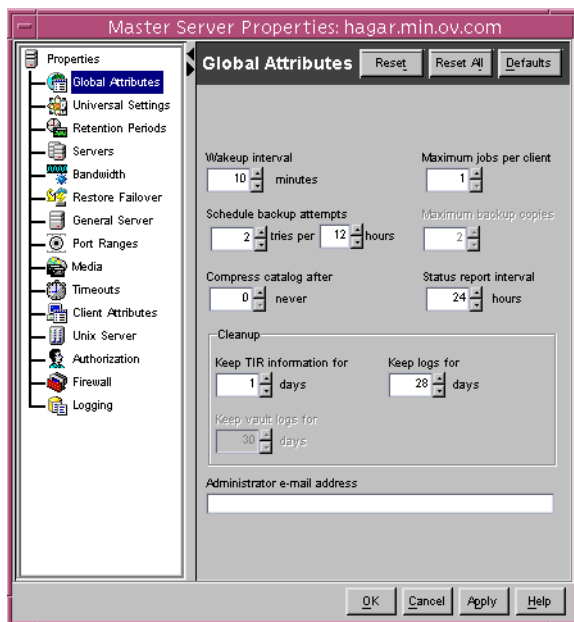
To avoid any problems, we recommend that you enter a value of 99 for the **Maximum jobs per client** global attribute.

### ▼ To set the Maximum jobs per client attribute on a UNIX server

Use this procedure to set the **Maximum jobs per client** global attribute using the NetBackup Administration Console - Java interface on a Java-capable platform.

1. In the left pane of the NetBackup Administration Console, expand **Host Properties**. Select **Master Servers**.
2. In the right pane, double-click on the server icon. Click **Global Attributes**.

The Master Server Properties dialog box appears.



The default value is 1 for **Maximum jobs per client**.

3. Change the **Maximum jobs per client** value to a value equal to the maximum number of backups allowed per client.

---

**Tip** To avoid any problems, we recommend that you enter a value of 99 for the **Maximum jobs per client** global attribute.

---

## Configuring a NetBackup Policy

A NetBackup policy defines the backup criteria for a specific group of one or more clients. These criteria include:

- ◆ storage unit and media to use
- ◆ policy attributes
- ◆ backup schedules
- ◆ script files to be executed on the clients
- ◆ clients to be backed up

To use NetBackup Database Archiver, at least one Oracle policy with the appropriate schedules needs to be defined. A configuration can have a single policy that includes all clients or there can be many policies, some of which include only one client.

Most requirements for Oracle policies are the same as for file system backups. In addition to the attributes described here, there are other attributes for a policy to consider. Refer to the *NetBackup System Administrator's Guide* for detailed configuration instructions and information on all the attributes available.

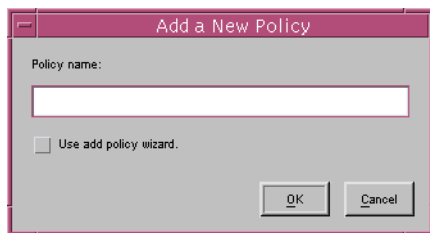
Use this procedure when configuring a policy from a UNIX server.

### ▼ To add a new policy

1. Log onto the server as root.
2. Start the NetBackup Administration Console.
3. If your site has more than one master server, choose the one to which you want to add the policy.
4. In the left pane, click on **Policies**. The right pane splits into a All Policies pane and a details pane.
5. In the All Policies pane, right-click on the Master Server, and click **New**.

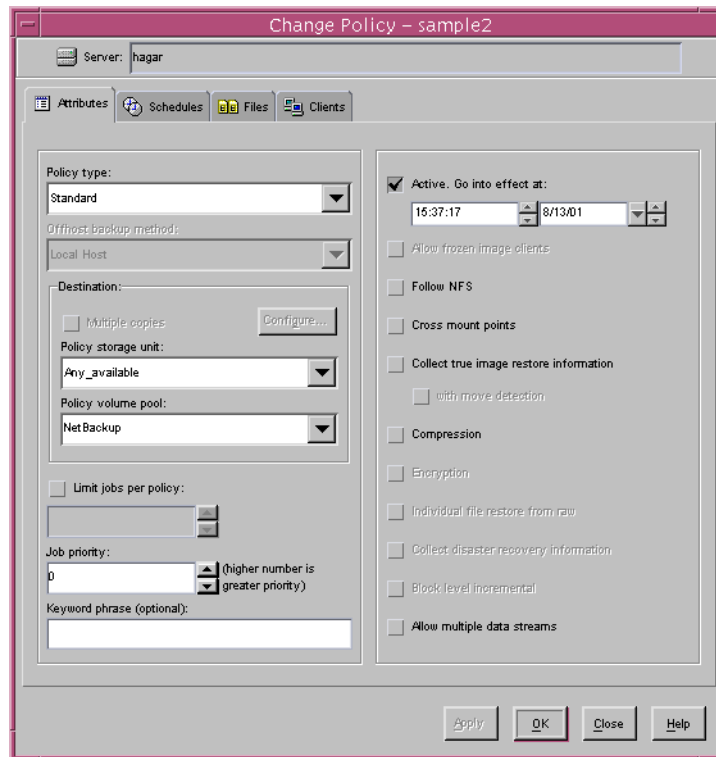


The Add a New Policy dialog box appears.



- a. In the **Policy name** box, type a unique name for the new policy.
  - b. Choose whether to use the wizard for configuring the policy. The wizard guides you through the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy.
    - To use the wizard, select the **Use add policy wizard** box and click **OK**. The wizard starts and you create the policy by following the prompts. When prompted, select the Oracle policy type.
    - If you require more control over the settings than the wizard provides, do not select the **Use add policy wizard box** and proceed to step 6.
6. Click **OK**.

A dialog box appears in which you can specify the general attributes for the policy.



7. From the **Policy type** box, select the Oracle policy type.
8. Complete the entries on the **Attributes** tab as explained in “Description of Attributes” and click **Apply** to save the attribute entries.
9. Add other policy information:
  - To add schedules, see “Adding New Schedules.”
  - To add scripts, see “Specifying the List of Scripts.”
  - To add clients, see “Adding Clients to a Policy.”

## Description of Attributes

With a few exceptions, NetBackup manages a database backup like a file system backup. Policy attributes that are different for Oracle backups are explained below.



Your other policy attributes will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide* for detailed explanations of the policy attributes.

Attribute	Description
Policy type	Determines the type of clients that can be in the policy and in some cases the types of backups that can be performed on those clients. To use NetBackup Database Archiver, you must have defined at least one Oracle policy.

## Adding New Schedules

Each policy has its own set of schedules. These schedules control initiation of automatic backups and also specify when user operations can be initiated.

A Oracle backup or archive requires at least two specific schedule types: an Application Backup schedule and an Automatic Backup schedule. You can also create additional schedules.

The following procedures explain how to configure the required schedule types, and how to add other new schedules.

### ▼ To configure an Application Backup schedule

1. Under the policy name, select **Schedules**.
2. In the right pane, double-click on the schedule named **Default-Application-Backup**.

A dialog box appears. The title bar shows the name of the policy to which you are adding the schedule.

All Oracle database operations are performed through NetBackup Database Archiver using an Application Backup schedule. This includes those backups started automatically.

You must configure an Application Backup schedule for each Oracle policy you create. If you do not do this, you will not be able to perform a backup. To help satisfy this requirement, an Application Backup schedule named Default-Application-Backup is automatically created when you configure a new Oracle policy.

3. Specify the other properties for the schedule as explained in "Schedule Properties."

The backup window for an Application Backup schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the Application Backup schedule starts processes that are required for all NetBackup Database Archiver backups, including those started automatically.

For example, assume that you:

- expect users to perform NetBackup operations during business hours, 0800 to 1300.
- configured automatic backups to start between 1800 and 2200.

The Application Backup schedule must have a start time of 0800 and a duration of 14 hours.

---

**Tip** Set the time period for the Application Backup schedule for 24 hours per day, seven days per week. This will ensure that your NetBackup Database Archiver operations are never locked out due to the Application Backup schedule.

---

Example Settings for an Application Backup schedule.

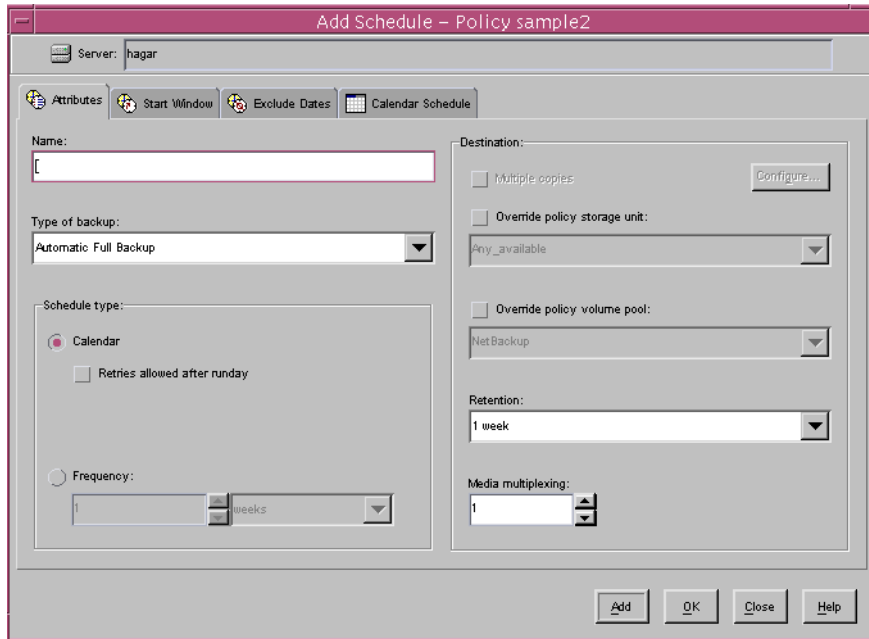
Type of Backup	Schedule settings	Description	Settings
Application Backup	Retention	The length of time backup images are stored.	infinity
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday through Saturday 00:00:01 - 23:59:59



▼ **To configure an automatic backup schedule**

1. In the All Policies pane, expand the policy you wish to configure. Right-click **Schedules** and choose **New**.

A dialog box appears. The title bar shows the name of the policy to which you are adding the schedules.



2. Specify a unique name for the schedule.
3. Select the **Type of Backup**.

For information on the types of backups available for this policy, see “Types of Backups.”



Refer to the following table for recommended settings for an Automatic Backup schedule.

Type of Backup	Schedule settings	Description	Settings
Automatic Full Backup	Retention	The length of time to store the record of a backup.	infinity
	Frequency	Frequency determines how often a backup should be performed	every month
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday, 18:00:00 - 22:00:00

4. Specify the other properties for the schedule as explained in “Schedule Properties.”

## Types of Backups

Application Backup	The Application Backup schedule enables user-controlled NetBackup operations performed on the client. At least one Application Backup schedule type must be configured for each Oracle policy. The Default-Application-Backup schedule is automatically configured as an Application Backup schedule.
Automatic Full Backup	The Automatic Full Backup schedule enables scheduled NetBackup operations performed on the client. It is used to automatically execute a Database Archiver script.
Automatic Differential Incremental Backup	The Automatic Differential Incremental Backup schedule should not be used for Database Archiver.
Automatic Cumulative Incremental Backup	The Automatic Cumulative Incremental Backup schedule should not be used for Database Archiver.



## Schedule Properties

Some of the schedule properties have a different meaning for database backups than for a regular file system backup. These properties are explained below.

Other schedule properties will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide* for detailed explanations of the schedule properties.

Property	Description
<b>Type of backup</b>	Specifies the type of backup that this schedule will control. The selection list shows only the backup types that apply to the policy you are configuring. For more information see "Types of Backups."
<b>Frequency</b>	This setting is used only for scheduled backups, and not for user-directed backups. <b>Frequency</b> specifies the period of time that will elapse until the next backup or archive operation can begin on this schedule. For example, if the frequency is seven days and a successful backup occurs on Wednesday, the next full backup will not occur until the following Wednesday. Normally, incremental backups will have a shorter frequency than full backups.
<b>Calendar</b>	This setting is used only for scheduled backups, and not for user-directed backups. The <b>Calendar</b> option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.
<b>Retention</b>	The retention period for an Application Backup or Automatic Full Backup refers to the length of time that NetBackup keeps archive images. NetBackup Database Archiver creates archives for long term storage and recovery. Set the retention level at a period of years, or infinity.
<b>Multiple copies</b>	If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Oracle policy, configure <b>Multiple copies</b> on the Application Backup schedule.

## Specifying the List of Scripts

The File list in a database policy has a different meaning than the File list has for other policies. Normally, in a Standard policy, you would list files and directories to be backed up. But since you are now configuring a database policy, you will list scripts.

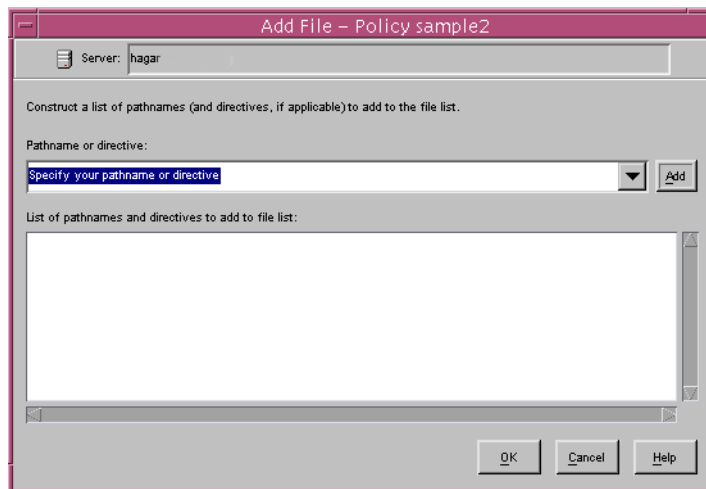
Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Files list will be executed for the Automatic Full Backup schedules as specified under the **Schedules** tab.

All scripts specified in the Files list are executed during manual or automatic backups. NetBackup will start backups by running the scripts in the order that they appear in the Files list.

#### ▼ To add scripts to the Scripts List

1. In the left pane, click **Policies**.
2. In the All Policies pane, expand the policy you want to add the scripts.
3. Right-click on **Files** and choose **New**.

The Add File dialog box appears. The title bar shows the name of the policy to which you are adding the script.



4. Type the name of the Oracle Database Archiver script.

Be sure to specify the full pathname when listing Database Archiver scripts. For example:

```
install_path/netbackup/ext/db_ext/oracle/samples/bporaexp/data_archiver_export.sh
```

Be sure that the Database Archiver scripts listed here are installed on each client in the Client list.

5. Click **Add**.
6. To add more scripts, repeat step 4 and step 5.



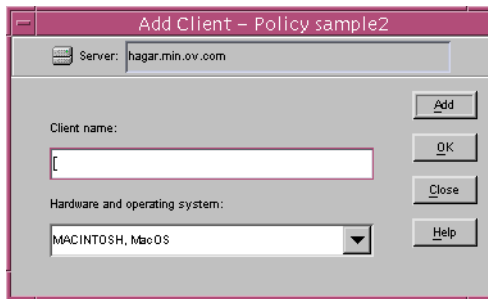
## Adding Clients to a Policy

The client list is the list of clients on which your NetBackup Database Archiver backups will be performed. A NetBackup client must be in at least one policy but can be in more than one.

### ▼ To add clients to a policy

1. In the left pane, expand **Policies**.
2. In the All Policies pane, expand the policy you wish to configure.
3. Right-click on **Clients** and choose **New**.

The Add Client dialog box appears. The title bar shows the name of the policy where you are adding clients.



4. In the **Client name** text box, type the name of the client that you are adding.  
On the client the following should be installed:
  - Oracle
  - NetBackup client
  - NetBackup Database Archiver
  - the backup, archive, or restore script(s)
5. Choose the hardware and operating system type and click **Add**.
6. If this is the last client, click **OK**. If you are going to add more clients, repeat step 4 and step 5.

# Configuring the Run-Time Environment

You must specify variables for both the Oracle environment and the NetBackup environment.

## Oracle

Perform the following actions to configure the Oracle run-time environment:

1. Set `ORACLE_HOME` to the location of the Oracle client software installation.

---

**Note** Oracle client software should be at the same level as Oracle server software.

---

2. Set `ORACLE_SID`  
e.g., `ORACLE_SID = PROD`

This variable can be used to specify the name of the database if it is located on the same machine as the NetBackup Client.

## NetBackup

The following is the order of precedence for the run-time configuration variable settings (when applicable).

1. environment variables set up in the parameter file  
Refer to “Environment Variables Set Up by a User in the Parameter File” on page 50 for details.
2. environment variables set up by NetBackup Database Archiver  
Refer to “Environment Variables Set Up by NetBackup Database Archiver” on page 50 for details.
3. `user bp.conf`  
Refer to “Create bp.conf File” on page 51 for details.
4. `master bp.conf`  
Refer to “Create bp.conf File” on page 51 for details.



## Environment Variables Set Up by a User in the Parameter File

Environment variables set by the user will take precedence over those set up by NetBackup Database Archiver.

The NetBackup Database Archiver variables that follow can be set in the parameter file for use in the Oracle user environment.

Allowed for export:

NB\_ORA\_SERV

Specifies the name of NetBackup master server.

NB\_ORA\_CLIENT

Specifies the name of the Oracle client.

NB\_ORA\_POLICY

Specifies the name of the policy to use for the Oracle archive.

NB\_ORA\_SCHED

Specifies the name of the *Application Backup* schedule to use for the Oracle archive.

Allowed for import:

NB\_ORA\_SERV

Specifies the name of NetBackup master server.

NB\_ORA\_CLIENT

Specifies the name of the Oracle client. It is especially useful for redirecting a restore to a different client.

Refer to:

- ◆ “Export Example 2, bpوراexp\_tables.param” on page 57
- ◆ “Import Example 3, bpوراimp\_tables.param” on page 65

## Environment Variables Set Up by NetBackup Database Archiver

When a schedule executes, NetBackup sets environment variables for shell scripts to use when performing a NetBackup operation. These variables are set only if the backup is started from the server (either automatically by the NetBackup scheduler or manually through the administrator interface). These variables are used by Database Archiver unless they are overridden by the parameter file.

NB\_ORA\_SERV

Name of the NetBackup Server.

NB\_ORA\_POLICY

Name of the Oracle policy.

NB\_ORA\_CLIENT

Name of the NetBackup client that hosts the Oracle database.

## Create bp.conf File

A NetBackup Database Archiver user can create an Oracle client bp.conf file in the Oracle user's home directory on the NetBackup Database Archiver client host. When a NetBackup Database Archiver operation is started, the user's bp.conf file is searched before the master configuration file (*install\_path/netbackup/bp.conf*) on the client. Any option found at the user level takes precedence over the same option in the master level configuration.

The following options can be set in the user's bp.conf file:

### BPBACKUP\_POLICY

This option specifies the name of the policy to use for the Oracle archive.

### BPBACKUP\_SCHED

This option specifies the name of the Application Backup type of schedule to use for the Oracle archive.

### CLIENT\_NAME

This option specifies the name of the Oracle client. It is especially useful for a redirected restore operation.

### CLIENT\_READ\_TIMEOUT

This option specifies the number of seconds the Oracle client will initially wait for a response from the NetBackup server. The default value is 900.

### SERVER

This option specifies the name of the NetBackup master server.

### VERBOSE

This option causes NetBackup to include more information in its logs.

See the *NetBackup System Administrator's Guide - UNIX* for more details and default values.

The following shows example bp.conf entries for an Oracle user:

```
SERVER=jupiter
CLIENT_READ_TIMEOUT=1200
VERBOSE=1
```



## Creating Scripts

Script files must be created on the client before NetBackup Database Archiver backups can be performed automatically. This section describes the following types of scripts.

- ◆ A NetBackup Database Archiver script is necessary when an unattended scheduled backup is performed. These scripts are specified in the Oracle policy File or Script List. Refer to “Create NetBackup Database Archiver Scripts,” below.
- ◆ Scripts containing the `bpوراexp` or `bpوراimp` utilities also require a parameter file. The database administrator can use the sample parameter files provided, edit the samples, or create new parameter files.

### Create NetBackup Database Archiver Scripts

When NetBackup Database Archiver was initially installed, example scripts were placed in the following directories.

For export: `install_path/netbackup/ext/db_ext/oracle/samples/bporaexp`

The Database Archiver example scripts installed are:

```
data_archiver_export.sh
data_archiver_export64.sh
bpوراexp_help.param
bpوراexp_partitions.param
bpوراexp_table_to_files.param
bpوراexp_tables.param
bpوراexp_tables_rows.param
```

For import: `install_path/netbackup/ext/db_ext/oracle/samples/bporaimp`

The Database Archiver example scripts installed are:

```
data_archiver_import.sh
data_archiver_import64.sh
bpوراimp_archive.param
bpوراimp_archive_schema_to_files.param
bpوراimp_archive_to_users.param
bpوراimp_bfile_table.param
bpوراimp_help.param
bpوراimp_ignore_rows_table.param
bpوراimp_large_table.param
bpوراimp_list.param
bpوراimp_old_archive.param
bpوراimp_partitions.param
bpوراimp_table_from_files.param
bpوراimp_table_to_files.param
bpوراimp_table_to_user.param
```



bporaimp\_tables.param

1. Copy the example scripts to a different directory on your client. Database Archiver scripts can be located anywhere on the client.
2. Modify each script for your environment.

### **Export Example 1, data\_archiver\_export.sh**

This example sets up the environment and calls `bporaexp` with an example parameter file.

```
#!/bin/sh

#
# -----
# data_archiver_export.sh
# -----
# This script uses bporeaexp to export Oracle table data in XML format using
# a NetBackup policy. It is assumed that this script will be executed
# by user root. In order for the bporeaexp utility to work properly we
# switch user (su -) to a user account that has the correct environment
# for running a utility that accesses Oracle.
# The archive will be owned by this operating system user account
# which must then be used to perform an import.
# If this script runs under this user account instead of as root
# you should remove the switch user logic.
#
# -----
#
# -----
# Put output in <this file name>.out. Change as desired.
# Note: output directory requires write permission.
# -----
```



```
OUTF=${0}.out

# -----
# You may want to delete the output file so that backup information does
# not accumulate.  If not, delete the following lines.
# -----

if [ -f "$OUTF" ]
then
    rm -f "$OUTF"
fi

{ # output block

echo "`date` -----Beginning of Script-----"
echo "Script name: $0"

# -----
# Replace /db/oracle/product/8.1.7, below, with the Oracle home path.
# -----

ORACLE_HOME=/db/oracle/product/8.1.7
export ORACLE_HOME

# -----
# Replace ORA817, below, with the Oracle SID of the target database.
# -----

ORACLE_SID=ORA817
export ORACLE_SID
```

```

# -----
# Replace ora817, below, with the Oracle DBA user id (account).
# -----

ORACLE_USER=ora817

# -----
# Replace ${ORACLE_HOME}/scripts with the NetBackup Oracle script path.
# Since subsequent installs or deinstalls will remove this file, you will
# want to move this script from its installed location before making updates.
# -----

NB_ORA_SCRIPTS=${ORACLE_HOME}/scripts

# -----
# Replace ${NB_ORA_SCRIPTS}/bporaexp_tables.param with the location of the
# XML export parameter file.
# -----

NB_ORA_EXP_PARAMS=${NB_ORA_SCRIPTS}/bporaexp_tables.param

# -----
# Specify the location of the XML export utility.
# -----

BPORAEXP=/usr/opensv/netbackup/bin/bporaexp

# -----
# Print out the value of the variables set by this script.
# -----

```



```
echo

echo  "ORACLE_SID: $ORACLE_SID"

echo  "ORACLE_USER: $ORACLE_USER"

echo  "ORACLE_HOME: $ORACLE_HOME"

echo  "NB_ORA_SCRIPTS: $NB_ORA_SCRIPTS"

echo  "NB_ORA_EXP_PARAMS: $NB_ORA_EXP_PARAMS"

echo  "BPORAEXP: $BPORAEXP"


echo


# -----
# Print out the value of the variables set by bphdb.
# Settings in bporaexp_tables.param will override
# NB_ORA_SERV and NB_ORA_POLICY values.
# -----

echo  "NB_ORA_SERV: $NB_ORA_SERV"

echo  "NB_ORA_POLICY: $NB_ORA_POLICY"

echo


# -----
# Call bporaexp
# -----


echo

echo  "% ${BPORAEXP} parfile=${NB_ORA_EXP_PARAMS}"

echo


su - $ORACLE_USER -c "

ORACLE_SID=$ORACLE_SID

export ORACLE_SID
```



```

ORACLE_HOME=$ORACLE_HOME

export ORACLE_HOME

NB_ORA_SERV=$NB_ORA_SERV

export NB_ORA_SERV

NB_ORA_POLICY=$NB_ORA_POLICY

export NB_ORA_POLICY

${BPORAEXP} parfile=${NB_ORA_EXP_PARAMS}

"

RETURN_STATUS=$?

echo

echo "`date` -----End of Script-----"

echo

echo "exit $RETURN_STATUS"

exit $RETURN_STATUS

} >> $OUTF

```

### Export Example 2, bpوراexp\_tables.param

This example parameter file is used with bpوراexp to archive two tables.

```

#

# -----

# bpوراexp_tables.param

# -----

#

# Archives multiple tables using a NetBackup Policy.

#

# Script run by:

# bpوراexp parfile=bpوراexp_tables.param

#

# -----

```



```
#

# Maximum number of rows fetched at a time

#

ROW_BUFFER = 1000

#

# Do not use SET TRANSACTION READ ONLY so that each table is exported
# as a separate transaction

#

CONSISTENT = N

#

# Keyword phrase that NetBackup associates with the archive

#

KEYWORD = "ArchiveName Keywords"

#

# Name of the archive

# The master XML schema file will be called ArchiveName.xsd

#

NAME = ArchiveName

#

# Names of the tables to be archived

# The userid must have SELECT access on all tables

#

TABLES = username1.table1, username2.table2

#

# Oracle login credentials

#

USERID = username1/password

#

# File name to receive informational and error messages

#

LOG = /db/oracle/logs/archive/bporaexp_tables.log
```



```

#
# NetBackup master server
#
NB_ORA_SERV = ServerName
#
# NetBackup Oracle client
#
NB_ORA_CLIENT = ClientName
#
# NetBackup Oracle policy
#
NB_ORA_POLICY = PolicyName
#
# NetBackup Oracle backup policy schedule
#
NB_ORA_SCHED = Default-Application-Backup

```

### Import Example 1, data\_archiver\_import.sh

This example sets up the environment and calls `bporaimp` with an example parameter file.

```

#!/bin/sh

#
# -----
# data_archiver_import.sh
# -----
# This script uses bporaimp to import Oracle table data that was previously
# exported in XML format using the bporeaexp utility.
# It is assumed that this script will be executed
# by user root. In order for the bporaimp utility to work properly we
# switch user (su -) to a user account that has the correct environment
# for running a utility that accesses Oracle.

```



```
# The operating system user account that was used to create the archive
# must be used to perform the import.
# If this script runs under this user account instead of as root
# you should remove the switch user logic.
#
# -----
#
# -----
# Put output in <this file name>.out. Change as desired.
# Note: output directory requires write permission.
# -----

OUTF=${0}.out

# -----
# You may want to delete the output file so that backup information does
# not accumulate. If not, delete the following lines.
# -----

if [ -f "$OUTF" ]
then
    rm -f "$OUTF"
fi

{ # output block

echo "`date` -----Beginning of Script-----"
echo "Script name: $0"

# -----
# Replace /db/oracle/product/8.1.7, below, with the Oracle home path.
```



```
# -----

ORACLE_HOME=/db/oracle/product/8.1.7
export ORACLE_HOME

# -----
# Replace ORA817, below, with the Oracle SID of the target database.
# -----

ORACLE_SID=ORA817
export ORACLE_SID

# -----
# Replace ora817, below, with the Oracle DBA user id (account).
# -----

ORACLE_USER=ora817

# -----
# Replace ${ORACLE_HOME}/scripts with the NetBackup Oracle script path.
# Since subsequent installs or deinstalls will remove this file, you will
# want to move this script from its installed location before making updates.
# -----

NB_ORA_SCRIPTS=${ORACLE_HOME}/scripts

# -----
# Replace ${NB_ORA_SCRIPTS}/bporaimp_tables.param with the location of the
# XML import parameter file.
# -----
```



```
NB_ORA_IMP_PARAMS=${NB_ORA_SCRIPTS}/bporaimp_tables.param

# -----
# Specify the location of the XML import utility.
# -----

BPORAIMP=/usr/opensv/netbackup/bin/bporaimp

# -----
# Print out the value of the variables set by this script.
# -----

echo
echo  "ORACLE_SID: $ORACLE_SID"
echo  "ORACLE_USER: $ORACLE_USER"
echo  "ORACLE_HOME: $ORACLE_HOME"
echo  "NB_ORA_SCRIPTS: $NB_ORA_SCRIPTS"
echo  "NB_ORA_IMP_PARAMS: $NB_ORA_IMP_PARAMS"
echo  "BPORAIMP: $BPORAIMP"
echo

# -----
# Print out the value of the variables set by bphdb.
# Settings in bporaimp_tables.param will override
# NB_ORA_SERV value.
# -----

echo  "NB_ORA_SERV: $NB_ORA_SERV"
echo  "NB_ORA_POLICY: $NB_ORA_POLICY"
echo
```

```

# -----
# Call bporaimp
# -----

echo
echo "% ${BPORAIMP} parfile=${NB_ORA_IMP_PARAMS}"
echo

su - $ORACLE_USER -c "
ORACLE_SID=$ORACLE_SID
export ORACLE_SID
ORACLE_HOME=$ORACLE_HOME
export ORACLE_HOME
NB_ORA_SERV=$NB_ORA_SERV
export NB_ORA_SERV
${BPORAIMP} parfile=${NB_ORA_IMP_PARAMS}
"
RETURN_STATUS=$?

echo
echo "`date` -----End of Script-----"
echo
echo "exit $RETURN_STATUS"
exit $RETURN_STATUS

} >> $OUTF

```

### **Import Example 2, bporaimp\_list.param**

This example parameter file is used with `bporaimp` to create a report of previously created NetBackup Database Archiver archives.

```
#
```



```
# -----  
#   bporaimp_list.param  
# -----  
#  
#   Lists the XML archives available according to search criteria.  
#   Valid search criteria include any combination of  
#   NAME, TABLES, FROMUSER, KEYWORD, ARCHIVE_DATE_FROM, and ARCHIVE_DATE_TO.  
#  
#   Script run by:  
#       bporaimp parfile=bporaimp_list.param  
#  
# -----  
#  
LIST = Y  
#  
#   Oracle login credentials used to create archive  
#   Only archives created using this Oracle userid are listed.  
#  
USERID = username1/password  
#  
#   Start date for the archive search  
#  
ARCHIVE_DATE_FROM = 05/01/2001  
#  
#   End date for the archive search  
#  
ARCHIVE_DATE_TO = 05/15/2001  
#  
#   Keyword phrase that NetBackup associated with the archive  
#  
KEYWORD = "ArchiveName Keywords"
```

```

#
# Name of the archive
#
NAME = ArchiveName
#
# Owner of the table
#
FROMUSER = username1
#
# Name of the table
#
TABLES = table1
#
# File name to receive informational and error messages
#
LOG = /db/oracle/logs/archive/bporaimp_list.log
#
# NetBackup master server
#
NB_ORA_SERV = ServerName
#
# NetBackup Oracle client
#
NB_ORA_CLIENT = ClientName

```

### **Import Example 3, bporaimp\_tables.param**

This example parameter file is used with `bporaimp` to restore two tables from an archive, and to import the data into an Oracle database.

```

#
# -----
# bporaimp_tables.param

```



```
# -----  
#  
# Restores multiple tables from a NetBackup XML archive and inserts  
# the data into Oracle.  
# The latest archive is used by default.  
#  
# Script run by:  
#     bporaimp parfile=bporaimp_tables.param  
#  
# -----  
#  
# Name of the archive  
#  
NAME = ArchiveName  
#  
# Name of the tables  
#  
TABLES = table1, table2  
#  
# Oracle login credentials  
# The Oracle USERID that exported the tables must be the same as the  
# Oracle USERID that is importing the tables.  
#  
USERID = username1/password  
#  
# File name to receive informational and error messages  
#  
LOG = /db/oracle/logs/archive/bporaimp_tables.log  
#  
# NetBackup master server  
#
```



```
NB_ORA_SERV = ServerName  
  
#  
  
# NetBackup Oracle client  
  
#  
  
NB_ORA_CLIENT = ClientName
```



## Testing NetBackup Database Archiver Configuration Settings

After you have configured the master server for NetBackup Database Archiver, you should test the configuration settings. For a description of status codes, refer to the *NetBackup Troubleshooting Guide for Windows* if you are using a Windows server or the *NetBackup Troubleshooting Guide for UNIX* if you are using a UNIX server.

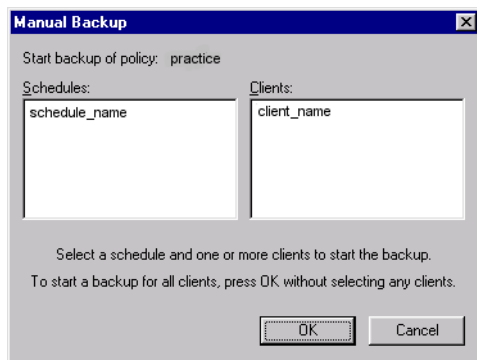
### NetBackup Administration Console for Windows

Use this procedure to test a policy configuration from a Windows server or from the Remote Administration Console.

#### ▼ To test the configuration settings on a Windows server

1. Log onto the server as administrator.
2. Start the NetBackup Administration Console.
3. In the left pane, click **Policies**. The policy list appears in the right pane.
4. Click on the policy you wish to test.
5. From the **Actions** menu, click **Manual Backup**.

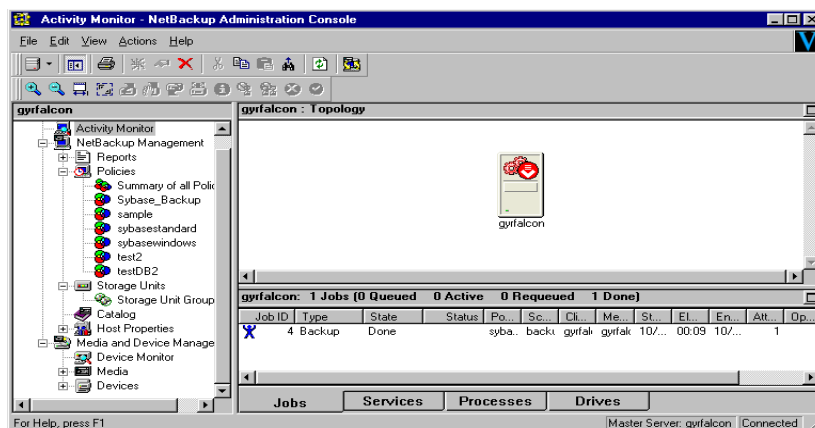
The Manual Backup dialog box appears.



The Schedules pane contains the name of a schedule (or schedules) configured for the policy you are going to test. The Clients pane contains the name of the client(s) listed in the policy you are going to test.



6. Follow the instructions on the dialog box.
7. Click **Activity Monitor** on the NetBackup Administration Console.



If the manual backup does not exit with a successful status, refer to the Troubleshooting chapter.

## NetBackup Administration Console for UNIX

Use this procedure to test a policy configuration on the NetBackup Administration Console for UNIX.

### ▼ To test the configuration settings on a UNIX server

1. Log onto the server as root.
2. Start the NetBackup Administration Console.
3. In the left pane, click **Policies**.  
The right pane splits into an All Policies pane and a details pane.
4. In the All Policies pane, click the policy you wish to test.
5. From the **Actions** menu, click **Manual Backup**.

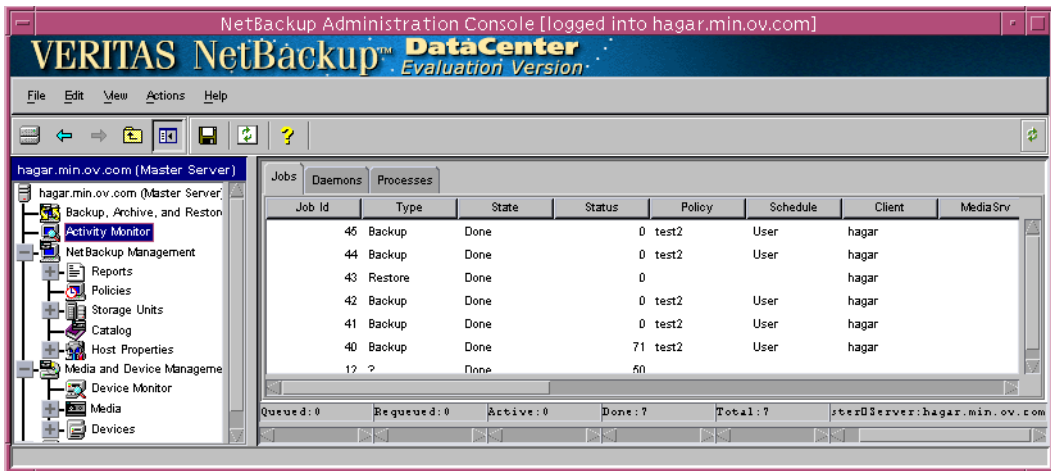


The Manual Backup dialog box appears.



The Schedules pane contains the name of a schedule (or schedules) configured for the policy you are going to test. The Clients pane contains the name of the client(s) listed in the policy you are going to test.

- 6. Follow the instructions on the dialog box.
- 7. Click **Activity Monitor** on the NetBackup Administration Console.



If the manual backup does not exit with a successful status, refer to the Troubleshooting chapter.



# Using NetBackup Database Archiver

---

## 4

When installation and configuration are complete, you can use the NetBackup interfaces or the command line interface to start Oracle archives and restores.

This chapter contains the following sections:

- ◆ Performing an Archive
- ◆ Browsing Archives
- ◆ Performing a Restore



## Performing an Archive

Archives can be performed by using:

- ◆ Automatic Archive of an Oracle Policy
- ◆ Manual Archive of an Oracle Policy
- ◆ User-Directed Archive From the Client

### Automatic Archive of an Oracle Policy

The most convenient way to archive your database is to set up schedules for automatic archives. When the NetBackup scheduler invokes a schedule for an automatic archive, the NetBackup Database Archiver scripts run:

- ◆ In the same order as they appear in the file list
- ◆ On all clients that have them (that is, matching pathnames)

### Manual Archive of an Oracle Policy

The administrator can use the NetBackup server software to manually execute an automatic archive schedule for the Oracle policy. See the *NetBackup System Administrator's Guide for UNIX* or the *NetBackup System Administrator's Guide for Windows* for detailed instructions.

Refer to “Testing NetBackup Database Archiver Configuration Settings” on page 68 for instructions on initiating a manual archive of an Oracle policy.

### User-Directed Archive From the Client

This section describes the following procedures for performing user-directed archives:

- ◆ Executing the NetBackup Database Archiver script on the Client
- ◆ Executing bporaexp on the Client as an Oracle User

#### Executing the NetBackup Database Archiver Script on the Client

If you know the pathname of the NetBackup Database Archiver script that initiates the archive, you can execute the shell script from the UNIX command prompt.

For example, to perform a database archive, at the UNIX command prompt you might enter:

```
/oracle8/scripts/data_archiver_export.sh
```

The UNIX shell starts the database archive by executing the Database Archiver script. The Database Archiver script contains commands to execute `bpوراexp`.

The NetBackup Database Archiver installation script installs sample scripts in the following location:

```
install_path/netbackup/ext/dbext/oracle/samples/bporaexp/
```

## Executing `bpوراexp` on the Client as an Oracle User

As an Oracle user you can also execute the `bpوراexp` command from the UNIX command line with the desired parameter file.

---

**Note** Be sure to configure the run-time environment as specified in the chapter on Configuration, because this method does not call the full script that includes the run-time configuration. Check the sample scripts for run-time environment details.

---

`bpوراexp` creates a set of XML schema and instance documents. For each archive, one master XML schema (.xsd) document is generated. In addition, for each table, `bpوراexp` generates a table specific schema (.xsd) document and a table specific instance (.xml) document. Additional files are created if the table contains LONG or LOB columns.

`bpوراexp` creates these files in either an Operating System directory or using a NetBackup storage unit. The `DIRECTORY` parameter specifies an OS directory, and if this parameter is not used, NetBackup will be used.

For example, the archive `test1` contains one table, `USER1.TEST1`. If the `DIRECTORY` parameter is set to `/db/netbackup/xml`, the following files are created:

```
/db/netbackup/xml/test1/test1.xsd
/db/netbackup/xml/test1/USER1/TEST1.xsd
/db/netbackup/xml/test1/USER1/TEST1.xml
```

If the `DIRECTORY` parameter is not used, NetBackup will be used. A NetBackup backup set will be created and cataloged under the name `/Oracle/XMLArchive`. All Database Archiver backups are cataloged using this convention.

For example, if the previous archive is created using NetBackup, the following files are created and cataloged:

```
/Oracle/XMLArchive/test1/test1.xsd
/Oracle/XMLArchive/test1/USER1/TEST1.xsd
/Oracle/XMLArchive/test1/USER1/TEST1.xml
```



In production, Database Archiver should be used in NetBackup mode. NetBackup mode provides the advantage of NetBackup features including searching and cataloging with the NetBackup catalog and automatic handling of output that exceeds file system limits. With the DIRECTORY parameter, file system limits, such as a 2 GB maximum, may cause an error.

▼ **To execute bpوراexp on the client**

At the command prompt, enter:

```
bpوراexp [username/password] parfile = filename | help=y
```

---

**Note** On 64-bit platforms, the bpوراexp64 command is also available.

---

---

**Note** Use the NetBackup parameters NB\_ORA\_SERV, NB\_ORA\_CLIENT, NB\_ORA\_POLICY, and NB\_ORA\_SCHED to specify the NetBackup run-time configuration. Otherwise, the order of precedence for the run-time configuration variable settings is used. See “Configuring the Run-Time Environment” on page 49.

---

The following table shows the available bpوراexp parameters with their default values. Note that some parameters only apply when bpوراexp is using a NetBackup storage unit, that is, when the DIRECTORY parameter is not specified. If the DIRECTORY parameter is specified, these parameters are ignored.

Parameter	Required?	Default	Description	NetBackup Mode Only
CONSISTENT	N	N	Specifies whether or not bpوراexp uses the SET TRANSACTION READ ONLY statement to ensure that the data from all tables is consistent to a single point in time and does not change during the execution of the bpوراexp command. If the default of CONSISTENT = N is used, each table is exported as an independent transaction.	N



Parameter	Required?	Default	Description	NetBackup Mode Only
KEYWORD	N	no default	Optionally specifies a keyword phrase that NetBackup associates with the image being created by the archive operation. Values for KEYWORD must be in double quotes.	Y
DIRECTORY	N	no default	Optionally specifies a directory for the output of the <code>bporaexp</code> utility.	N
HELP	N	N	Displays a help message with descriptions of <code>bporaexp</code> parameters. (Does not actually export data if <code>HELP=Y</code> )	N
LOG	N	no default	Optionally specifies a file name to receive informational and error messages. If this parameter is specified, messages are logged in the log file and not displayed to the terminal display.	N
NAME	Y	no default	The name of the master XML schema file.	N
NB_ORA_SERV	N	Default Master Server	Optionally specifies the name of the NetBackup master server	Y
NB_ORA_CLIENT	N	Default Client	Optionally specifies the name of the NetBackup Oracle client.	Y
NB_ORA_POLICY	N	Default Oracle Policy	Optionally specifies the name of the NetBackup Oracle Policy	Y



Parameter	Required?	Default	Description	NetBackup Mode Only
NB_ORA_SCHED	N	Default Backup Policy Schedule	Optionally specifies the name of the Backup Policy Schedule to use.	Y
QUERY	N	no default	<p>This parameter allows for the selection of a subset of rows from a set of tables. The value of the query parameter is a string that contains a WHERE clause for a SQL select statement that will be applied to all tables (and table partitions) listed in the TABLES parameter.</p> <p>For example, if TABLES = emp, bonus and QUERY = "where job = 'SALESMAN' and sal &lt; 1600", two SQL statements will be executed:</p> <pre>SELECT*FROM emp where job='SALESMAN' and sal&lt;1600; SELECT*FROM bonus where job='SALESMAN' and sal&lt;1600;</pre> <p>Note that each query executed refers to a single table at a time in the FROM clause, so it is illegal to have a join in the WHERE clause.</p>	N
ROW_BUFFER	N	1000	Specifies the size, in rows, of the buffer used to fetch rows. Tables with LONG columns are fetched one row at a time. The maximum value allowed is 32767.	N
TABLES	Y	no default	Lists the table names and partition names to export. The USERID must have SELECT privilege on the tables. The syntax used is: schema.table: partition name	N





Parameter	Required?	Default	Description	NetBackup Mode Only
USERID	Y	no default	Specifies the username/password (and optional connect string) of the user initiating the export. If a connect string is not provided, the ORACLE_SID environment variable is used.	N

## Browsing Archives

This section describes the following procedures for browsing archive images:

- ◆ Using bporaimp parameters to browse archives
- ◆ Using bplist to browse archives

---

**Note** Only archives created using NetBackup are searched. Exports stored in an Operating System directory using the DIRECTORY parameter are not searched.

---

### Using bporaimp Parameters to Browse Archives

To use the bporaimp command to browse archives, create a parameter file with the desired search criteria. First, set the variables LIST = Y and USERID = username/. Only the archives created using the Oracle USERID will be listed.

The Oracle password is not required. The UNIX account that is running bporaimp will only have access to archives that were created using the same UNIX account.

Use the NB\_ORA\_SERV and NB\_ORA\_CLIENT parameters to specify the NetBackup server and client. Otherwise, the order of precedence for the run-time configuration variable settings is used. See “Configuring the Run-Time Environment” on page 49.

Valid search criteria include any combination of the following parameters:



Parameter	Default	Description
ARCHIVE_DATE_FROM	no default	Optionally specifies a start date for the archive search. Used with ARCHIVE_DATE_TO to specify a range. The date format is mm/dd/yyyy [hh:mm:ss].
ARCHIVE_DATE_TO	no default	Optionally specifies an end date for the archive search. Used with ARCHIVE_DATE_FROM to specify a range. The date format is mm/dd/yyyy [hh:mm:ss].
KEYWORD	no default	Optionally specifies a keyword phrase for NetBackup to use when searching for archives.
NAME	no default	The name of the master XML schema file.
FROMUSER	no default	Optionally specifies a comma-separated list of table owners.
TABLES	no default	Optionally specifies a list of table and partition names that were included in an archive.

Assume you named the list parameter file `bporaimp_list.param`. At the command prompt, enter:

```
bporaimp parfile = bporaimp_list.param
```

---

**Note** On 64-bit platforms, the `bporaimp64` command is also available.

---

## Using `bplist` to Browse Database Archives

For a higher level view of the archive list, you can use the `bplist` command to browse Oracle archives. The result is the list of archive file names. The following example uses `bplist` to search all Oracle archives for a client named `jupiter`. The sample output is produced for two archives, `test1` and `little_sales`, where each archive has one Oracle table (`test1` has `USER1.TEST1` and `little_sales` has `USER1.LITTLE_SALES`).

```
install_path/bplist -C jupiter -t 4 -R /Oracle/XMLArchive/  
/Oracle/XMLArchive/test1/test1.xsd  
/Oracle/XMLArchive/test1/USER1/TEST1.xsd  
/Oracle/XMLArchive/test1/USER1/TEST1.xml
```

```
/Oracle/XMLArchive/little_sales/little_sales.xsd  
/Oracle/XMLArchive/little_sales/USER1/LITTLE_SALES.xsd  
/Oracle/XMLArchive/little_sales/USER1/LITTLE_SALES.xml
```

The `-t 4` on this command specifies the Oracle backups or archives. The `-R` specifies the default number of directory levels to search, 999. Refer to `bplist(1M)` man page for more information on this command.



## Performing a Restore

Make sure an archive has been successfully completed before attempting a restore. Use the procedures for browsing archives as described in the previous section to identify the correct archive to restore. An error will occur if an archive history does not exist.

This section describes the following procedures for performing user-directed restores:

- ◆ Executing a Database Archiver script on the client
- ◆ Executing `bporaimp` on the client
- ◆ Redirecting a Restore to a Different Client

### Executing a Database Archiver Script on the Client

If you know the pathname of the Database Archiver script that initiates the restore, you can start it from the UNIX command prompt. For example, to perform a restore at the UNIX command prompt you might enter:

```
/oracle8/scripts/data_archiver_import.sh
```

The UNIX shell starts the restore by executing the Database Archiver script file. The Database Archiver script file contains commands to execute `bporaimp`.

The NetBackup Database Archiver installation script installs sample scripts in the following location:

```
/netbackup/ext/dbext/oracle/samples/bporaimp/
```

### Executing `bporaimp` on the Client

Execute the `bporaimp` command from the UNIX command line on the client using the appropriate parameter file. The UNIX account that is running `bporaimp` will only have access to archives that were created using the same UNIX account.

---

**Note** Be sure to configure the run-time environment as specified in the chapter on Configuration, because this method does not call the full script that includes the run-time configuration. Check the sample scripts for run-time environment details.

---

#### ▼ To execute `bporaimp` on the client

At the command prompt, enter:

```
bporaimp [username/password] parfile = filename | help=y
```

---

**Note** On 64-bit platforms, the `bporaimp64` command is also available.

---



---

**Note** Use the NetBackup parameters `NB_ORA_SERV` and `NB_ORA_CLIENT` to specify the NetBackup run-time configuration. Otherwise, the order of precedence for the run-time configuration variable settings is used. See “Configuring the Run-Time Environment” on page 49.

---

The following table shows the available `bporaimp` parameters with their default values. Note that some parameters only apply when `bporaimp` is using a NetBackup storage unit, that is, when the `DIRECTORY` parameter is not specified. If the `DIRECTORY` parameter is specified, these parameters are ignored.

Parameter	Required?	Default	Description	NetBackup Mode Only
ARCHIVE_DATE_FROM	N	no default	Optionally specifies a start date for the archive to be imported. Used with <code>ARCHIVE_DATE_TO</code> to specify a range. If not used, the most recent archive is imported. If the range used results in more than one archive, the most recent from the range is used. The date format is <code>mm/dd/yyyy [hh:mm:ss]</code> .	Y



Parameter	Required?	Default	Description	NetBackup Mode Only
ARCHIVE_DATE_TO	N	no default	Optionally specifies an end date for the archive to be imported. Used with ARCHIVE_DATE_FROM to specify a range. If not used, the most recent archive is imported. If the range used results in more than one archive, the most recent from the range is used. The date format is mm/dd/yyyy [hh:mm:ss].	Y
BFILE_DIRECTORY	Y (if any table being imported has BFILE columns)	no default	Specifies a directory for the output of any BFILE columns being imported. Oracle's CREATE DIRECTORY command can be used to create the DIRECTORY in Oracle, and the name should match the name used in the export file.	N
COMMIT	N	N	Specifies whether bporaimp should commit after each array insert. The size of the array is determined by ROW_BUFFER. By default, bporaimp commits only after loading each table, and performs a rollback when an error occurs, before continuing with the next object.	N
DIRECTORY	N	no default	Optionally specifies a directory for the input of the bporaimp utility.	N



Parameter	Required?	Default	Description	NetBackup Mode Only
FROMUSER	N	no default	Optionally specifies a comma-separated list of users to import from an archive containing multiple users' tables. If not specified, all of the tables will be imported.	N
HELP	N	N	Displays a help message with descriptions of bporainp parameters.	N



Parameter	Required?	Default	Description	NetBackup Mode Only
IGNORE_ROWS	N	N	<p>Specifies whether or not rows should be inserted into a table that isn't empty. The default is that the table already exists and that it is empty. If it isn't empty, IGNORE_ROWS = N causes an error to be reported, and the table is skipped with no rows inserted.</p> <p>IGNORE_ROWS = Y causes rows to be inserted with errors reported in the LOG file.</p> <p>If IGNORE_ROWS = Y and an error such as a primary key constraint violation occurs, no data will be inserted if COMMIT = N. However, if COMMIT = Y, the array of rows (size determined by ROW_BUFFER) will not be inserted, but bporaimp will continue to process additional row arrays in the order in which they were exported. To cause all rows that don't violate a primary key constraint to be inserted, set COMMIT = Y, ROW_BUFFER = 1, and IGNORE_ROWS = Y.</p>	N





Parameter	Required?	Default	Description	NetBackup Mode Only
KEYWORD	N	no default	Optionally specifies a keyword phrase for NetBackup to use when searching for archives from which to restore files.	Y
LIST	N	N	LIST = Y queries the NetBackup catalog and lists the archives available. Does not actually import the data if LIST = Y	Y
LOG	N	no default	Optionally specifies a file name to receive informational and error messages. If this parameter is specified, messages are logged in the log file and not displayed to the terminal display.	N
NAME	Y	no default	The name of the master XML schema file. (This parameter is required if LIST = N.)	N
NB_ORA_SERV	N	Default Master Server	Optionally specifies the name of the NetBackup master server	Y
NB_ORA_CLIENT	N	Default Client	Optionally specifies the name of the NetBackup Oracle client.	Y
RESTORE_SCHEMA_ONLY	N	N	Used with RESTORE_TO_DIRECT ORY to restore the XML schema files only to a directory.	Y



Parameter	Required?	Default	Description	NetBackup Mode Only
RESTORE_TO_DIRECTORY	N	no default	Optionally specifies a directory for the output of the bporaimp utility. (If used, the XML data is not parsed and inserted into Oracle).	Y
ROW_BUFFER	N	1000	Specifies the size, in rows, of the buffer used to insert rows. Tables with LONG or LOB columns are inserted one row at a time. The maximum value allowed is 32767.	N
TABLES	N	no default	Optionally specifies a list of table and partition names to import. If not used, all tables in the archive will be imported. The tables must already exist, and the USERID must have INSERT privilege on the tables. The table names cannot be qualified with owner names, and the FROMUSER parameter is used to specify a particular owner. If a partition name is specified, it indicates the exported partition only and the rows are inserted according to the partitioning scheme of the target table. If the export contains partitions, and the import does not specify them, all will be inserted.	N



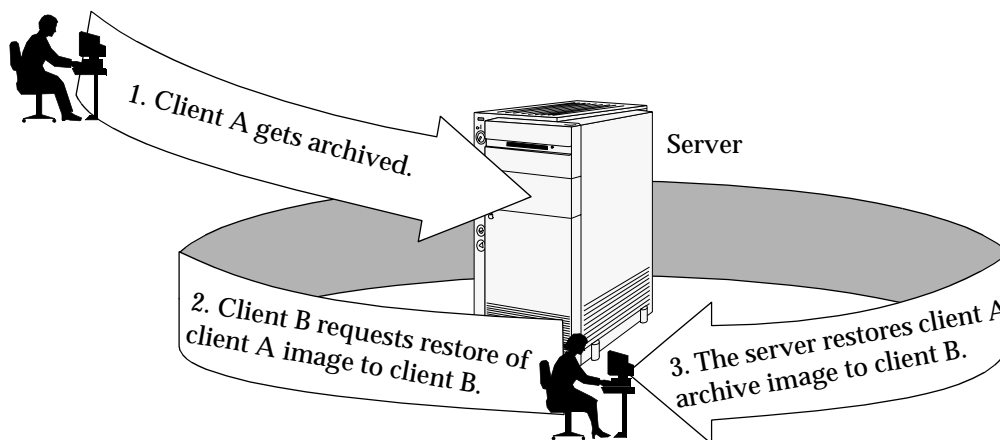
Parameter	Required?	Default	Description	NetBackup Mode Only
TOUSER	N	no default	Optionally specifies a comma-separated list of users to import to that may be used with the FROMUSER parameter to change the table owners. The TOUSER Oracle accounts must already exist, and the USERID must have INSERT privilege on the tables that must also exist.	N
USERID	Y	no default	Specifies the username/password (and optional connect string) of the user initiating the import. If a connect string is not provided, the ORACLE_SID environment variable is used.	N



## Redirecting a Restore to a Different Client

With NetBackup Database Archiver you have the option to restore an archive to a client other than the one that originally performed the archive. The process of restoring data to another client is called a redirected restore.

The following illustrates a typical redirected restore process.



Note that the user on client A was not able to initiate a redirected restore to client B. Only the user on client B, the client receiving the archive image, could initiate the redirected restore.

## Server Configuration

Ensure that the NetBackup server is configured to allow redirected restore. The administrator can remove restrictions for all clients by creating the following file on the Netbackup master sever:

```
install_path/netbackup/db/altnames/No.Restrictions
```

Or the administrator can restrict clients to restore only from certain other clients by creating and then adding client names to the file:

```
install_path/netbackup/db/altnames/client_name
```

Where *client\_name* is the name of the client allowed to do the redirected restore.

See the *NetBackup System Administrator's Guide* for details.

## Client Configuration

The same user name (UNIX account) that was used for the database archive must be used on the client where you are redirecting the restore.

## Using bporaimp for a Redirected Restore

Perform the following on the new client host if you want to restore XML archives that are owned by another client.

1. Set environment variables for bporaimp on the new client, including ORACLE\_HOME and ORACLE\_SID.
2. In bporaimp parameter file, include:  
     nb\_ora\_serv = NetBackup server  
     nb\_ora\_client = original client where archive occurred.
3. Specify other bporaimp parameters (see “Executing bporaimp on the Client” on page 80).
4. Run bporaimp.

### ▼ Example:

In this example, assume:

- ◆ Original client is jupiter
  - ◆ New client is saturn
  - ◆ Server is jupiter
  - ◆ ORACLE\_SID is test on both saturn and jupiter
  - ◆ UNIX user is ora8 on both jupiter and saturn
  - ◆ Archive name is sales.
1. Create the file, /usr/opensv/netbackup/db/altnames/saturn, on server jupiter and edit it to contain the name jupiter.
  2. Log on to saturn as ora8.
  3. Create bporaimp.param, including:  
     NAME = sales  
     NB\_ORA\_SERV = jupiter  
     NB\_ORA\_CLIENT = jupiter  
     USERID = orauser/orapasswd



4. Run `bporaimp parfile=bporaimp.param` to restore sales archive to saturn and to import the data into the test database on saturn.



This chapter explains how to determine and resolve problems encountered when using NetBackup Database Archiver. It contains the following sections:

- ◆ General Troubleshooting Procedure
- ◆ NetBackup and NetBackup Database Archiver Logs
- ◆ Troubleshooting Archive or Restore Errors



## General Troubleshooting Procedure

To perform this procedure, the following conditions must exist.

The following products are properly installed and configured:

- NetBackup 4.5
- Oracle RDBMS 8.1.5 or later
- NetBackup Database Archiver 4.5

1. When verifying your installation, ensure that the following NetBackup Database Archiver binaries exist:

- *install\_path/netbackup/bin/bphdb* resides on the client and is used by both the NetBackup scheduler and the graphical interface to start archives and restores. The main purpose of bphdb is to execute a script file that in turn calls bporaexp or bporaimp. Only the script is required when bporaexp or bporaimp is executed from the command line.
- *install\_path/netbackup/bin/bporaexp*
- *install\_path/netbackup/bin/bporaimp*
- *install\_path/lib/libbpورا.so.8.0*
- *install\_path/lib/libbpورا.so.9.0*

For 64-bit:

- *install\_path/netbackup/bin/bporaexp64*
- *install\_path/netbackup/bin/bporaimp64*
- *install\_path/lib/libbpورا64.so.8.0*
- *install\_path/lib/libbpورا64.so.9.0*

2. Ensure that the *ORACLE\_HOME* environment variable is set, and that *ORACLE\_SID* is set, unless specifying a connect string in the parameter file for bporaexp or bporaimp.

The version of the Oracle client should match the version of the Oracle server, so that the Oracle client and Oracle server software are at the same level.

3. Check that both the NetBackup server and client software are working properly. That is, check that normal operating system files can be backed up and restored from the client. The NetBackup client must be running the same version of software as the NetBackup server.

4. Check that the following NetBackup logs are turned on in *VERBOSE=5* mode:





- On the client: `bporaexp` (or `boraexp64`), `bporaimp` (or `boraimp64`), `bphdb`, and `bpcd`.
- On the master server: `bprd`, `bpsched`, and `bpdbm`.
- On the host with the storage unit: `bpbrm`, and `bptm`.

---

**Note** These logs may become very large, especially `bpsched` and `bpdbm`. Ensure that enough free disk space exists in the log directory disk partition.

---



## NetBackup and NetBackup Database Archiver Logs

NetBackup and NetBackup Database Archiver provide reports on archive and restore operations. These reports are useful for finding errors associated with those applications. The following describes troubleshooting logs and reports generated by NetBackup products.

### NetBackup Database Archiver Logs

The `bporaexp` and `bporaimp` programs perform error logging and tracing in the file specified by the `log` parameter. Ensure that the parameter file specifies at least a log qualifier. The log files contain non-NetBackup related errors including Oracle errors.

When `bporaexp` and `bporaimp` are being used in non-NetBackup mode, that is, when the `DIRECTORY` parameter is specified, these logs are the only source of error logging and tracing.

### NetBackup Logs

The NetBackup server and client software allow you to set up detailed debug logs for troubleshooting problems that occur with NetBackup. See the *NetBackup Troubleshooting Guide - UNIX* or the *NetBackup Troubleshooting Guide - Windows NT/2000* for a complete description of debug logs. Also see the `install_path/netbackup/logs/README.debug` file.

Enable the NetBackupDatabase Archiver logs by performing the following steps.

1. Create the following directories on the client:

```
install_path/netbackup/logs/bphdb
install_path/netbackup/logs/bporaexp
install_path/netbackup/logs/bporaimp
% cd install_path/netbackup/logs/
% mkdir bphdb
% mkdir bporaexp
% mkdir bporaimp
```

For 64-bit, create:

```
install_path/netbackup/logs/bporaexp64
install_path/netbackup/logs/bporaimp64

% cd install_path/netbackup/logs
% mkdir bporaexp64
% mkdir bporaimp64
```

## 2. Set the access permissions to 777 on these log directories.

```
% chmod 777 bphdb
% chmod 777 bporexp
% chmod 777 bporeimp
```

For 64-bit:

```
% chmod 777 bporexp64
% chmod 777 bporeimp64
```

The following sections describe the logs created when you create the log directories. Use a text editor to view the contents of the logs.

### **bphdb Directory on the Client**

The *install\_path/netbackup/logs/bphdb* directory contains the following types of logs. These logs are a good starting place to determine what type of error occurred.

*obk\_stdout.mmddyy*

Unless redirected elsewhere, NetBackup places Database Archiver script output in this file.

*obk\_stderr.mmddyy*

Unless redirected elsewhere, NetBackup places Database Archiver script errors in this file.

*log.log.mmddyy*

*bphdb* is the NetBackup Database Backup binary. This log contains debugging information for the *bphdb* process. NetBackup Database Archiver uses this client process for Database Archiver script execution. It is invoked when an automatic archive schedule is executed.

### **bporexp(bporexp64) Directory on the Client**

The *install\_path/netbackup/logs/bporexp(bporexp64)* directory contains the following execution log.

*log.log.mmddyy*

This log contains debugging information and execution status for the *bporexp(bporexp64)* program.

### **bporeimp(bporeimp64) Directory on the Client**

The *install\_path/netbackup/logs/bporeimp(bporeimp64)* directory contains the following execution log.



`log.log.mmddyy`

This log contains debugging information and execution status for the `bporaimp(bporaimp64)` program.

## Setting the Debug Level

You can control the amount of information written to the debug log in the `install_path/netbackup/logs/bporaexp, /bporaexp64` and `/bporaimp, /bporaimp64` directory by changing the `bp.conf` file to indicate the `VERBOSE` setting.

The higher the value, the more information is logged. In everyday normal operations, the default value of 0 is sufficient. However, VERITAS technical support may ask you to set the value higher when a problem is being analyzed.

- ❖ To change the Debug Level, enter the following line in the `bp.conf` file.

```
VERBOSE = 5
```

## NetBackup Server Reports

NetBackup provides other reports that are useful in isolating problems. One such report is All Logs Entries on the server. See the *NetBackup System Administrator's Guide* for a description of this and other reports.

## Troubleshooting Archive or Restore Errors

A NetBackup Database Archiver error can originate:

- ◆ On the NetBackup side:

An error can be from the `bporaexp` or `bporaimp` programs, the NetBackup server or client, or Media Manager.

- ◆ On the Oracle side:

The error can be from the target database.

VERITAS suggests that you use the following steps when troubleshooting a failed operation:

1. Check the logs to determine the source of the error.
2. Troubleshoot each stage of the archive or restore.

The following sections describe these steps in detail.

## Check the Logs to Determine the Source of the Error

1. Check the `bporaexp` or `bporaimp` log.

Messages are sent to the file name specified by

`log=`

in the `bporaexp` or `bporaimp` parameter file, or to the screen if `log=` is not specified.

Some common problems are:

- The `ORACLE_HOME` environment variable was not set.
- The `bporaexp` or `bporaimp` program was unable to connect to the target database.

The above errors are usually due to incorrect installation or configuration.

2. Check the NetBackup logs

The first NetBackup log to check is

`install_path/netbackup/logs/bporaexp/log.mmddyy` or `/bporaimp/log.mmddyy`. This is the most important log. Examine it closely. It contains messages that will provide the best way to determine the source of an error. This log is written by the NetBackup client and contains:

- Requests from `bporaexp` and `bporaimp`
- Activities between `bporaexp` and `bporaimp` and NetBackup processes.

If `install_path/netbackup/logs/bporaexp/log.mmddyy` or `/bporaimp/log.mmddyy` does not contain any messages, the possible errors are:

- `bporaexp` or `bporaimp` terminated before requesting service from NetBackup.
- `bphdb` (if started by the scheduler or graphical user interface) did not start the backup shell script successfully. Check the `bphdb` logs for `stderr` and `stdout` files.

Try to execute the Database Archiver script file from the command line to determine the problem. Usually, the error is due to a file permission problem for `bphdb` itself or the Database Archiver script file.



Ensure that the full Database Archiver script filename is entered correctly in the Script list of the Oracle policy configuration. See “Specifying the List of Scripts” for instructions on configuring the Script list.

Logs will not be created in this directory if the permissions are not set for the Oracle user to write to the directory. The full permissions setting, `chmod 777`, is best.

---

**Note** For 64-bit, the logs are created in `/bporaexp64` and `/bporaimp64`.

---

## Troubleshoot Each Stage of the Archive or Restore

The following explains the sequence of events for a `bporaexp` or `bporaimp` initiated action and suggests solutions for problems that can occur at each point in the sequence.

**1. `bporaexp` or `bporaimp` starts.**

An archive or restore can be started in any of the following ways:

- Command line from the system prompt such as:

```
bporaexp parfile = parameter filename
bporaimp parfile = parameter filename
```

- Manually from the NetBackup Administration console on the master server.
- Automatically by an automatic archive schedule.

If an error occurs at this point, check the `bporaexp` or `bporaimp` log.

**2. `bporaexp` or `bporaimp` verifies its environment, then connects to Oracle and NetBackup.**

An Oracle connect error is either due to an Oracle environment or database problem, or to an incorrect userid and password.

A NetBackup error at this point is usually due to a problem with client and server communication. Check the messages in the `bprd`, `bpsched`, and `bpcd` logs for clues. Also verify the `bp.conf` entries on the client.

**3. `bporaexp` or `bporaimp` issues an archive or restore request.**

`bporaexp` or `bporaimp` gathers necessary parameters, and then sends the archive or restore request to the NetBackup server. The API waits until both the server and client are ready to transfer data before returning.

The NetBackup client interfaces gather information from the following:

- Environment, including Database Archiver parameter files.
- User's `bp.conf` and `install_path/netbackup/bp.conf` files on the client

- Information file from bphdb to be used as parameters to the bprd process

This information is sent to the master server's bprd process.

To troubleshoot an archive problem in this part of the sequence, examine the *install\_path/netbackup/logs/bporaexp/log.mmddyy* or */bporaexp64/log.mmddyy*.

- If the bprd process failed, check the logs for bprd, bpbrm, and bpsched.

A failure at this point is frequently due to bad NetBackup server or Oracle policy configuration parameters.

NetBackup can usually select the correct Oracle policy and schedules, but not always when there are several Oracle policies in its database. Try setting the *SERVER* and *POLICY* values in the *bp.conf* file on the client, or use the following bporaexp parameters:

```
NB_ORA_POLICY=polycname
NB_ORA_SCHED=schedule
NB_ORA_SERV=NetBackup server
NB_ORA_CLIENT=NetBackup client
```

To troubleshoot a restore, examine the *install\_path/netbackup/logs/bporaimp/log.mmddyy* or */bporaexp64/log.mmddyy*. Make sure that the correct NetBackup server and NetBackup client values are being used by setting the following bporaimp parameters:

```
NB_ORA_SERV=NetBackup server
NB_ORA_CLIENT=NetBackup client
```

These parameters should be set to the same values that were used for the archive operation.

4. bporaexp or bporaimp issues read or write requests to the NetBackup client, which then transfers data to or from the NetBackup server.

bporaexp builds an SQL query for each table being archived, and uses Oracle's Call Interface (OCI) to execute the query. The query results are translated to XML. The XML output is passed to the NetBackup client interfaces.

The reverse process is used by bporaimp, i.e., XML data is restored, parsed, and inserted into the database.

A failure here is probably due to an Oracle error, or NetBackup media, network, or timeout errors.

5. bporaexp or bporaimp tells the NetBackup client to close the session and disconnects from the Oracle database.



The NetBackup client waits for the server to complete its necessary actions (archive image verification and so on) and then exits.

## Preventing Timeout Failures on Large Database Restores

Large database restores sometimes fail when multiple restore sessions compete for resources. In this situation, a restore session can be delayed waiting for media or device access. If the delay is too long, the restore session will timeout.

This problem can be resolved by increasing the NetBackup Client Read Timeout setting, which will prevent session timeouts and allow the restores to complete successfully.

Use the NetBackup Administration Console on the server to change the properties of each client that contains a database you may need to restore. The default for the Client Read Timeout setting is 300 seconds (5 minutes). For database agent clients, increase the value significantly to prevent timeout errors, e.g. 30 minutes.



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